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ABSTRACT

This report presents results from an analysis of the adult basic education (ABE) reading instruction research base, focusing on principles derived from the research and a future research agenda. After an introduction, Chapter 2 presents methods used to select and evaluate research related to ABE reading instruction. Chapter 3 serves as an index to the ABE and K-12 reading instruction research findings that appear in Chapters 4-9. Chapters 4-8 focus on these major aspects of reading instruction: assessing students to describe their reading "profiles" or overall reading ability; alphabetics instruction; fluency instruction; vocabulary instruction; and reading comprehension. Computer technology is covered in Chapter 9. Each chapter presents these items: (1) a description of the major aspect of reading covered, including a definition and rationale and, when appropriate, assessment; (2) major questions related to ABE reading instruction associated with specific topics of interest to ABE practitioners; (3) answers to questions in the form of emerging principles or trends when research addressed the questions; (4) summary of the research related to each principle or trend; and (5) ideas (and comments) for ABE reading instruction derived from K-12 reading instruction research. Chapter 10 summarizes important findings and presents an agenda for future research. Appendixes include 25 background references and 71 study references. (YLB)

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Research-Based Principles for Adult Basic Education Reading Instruction

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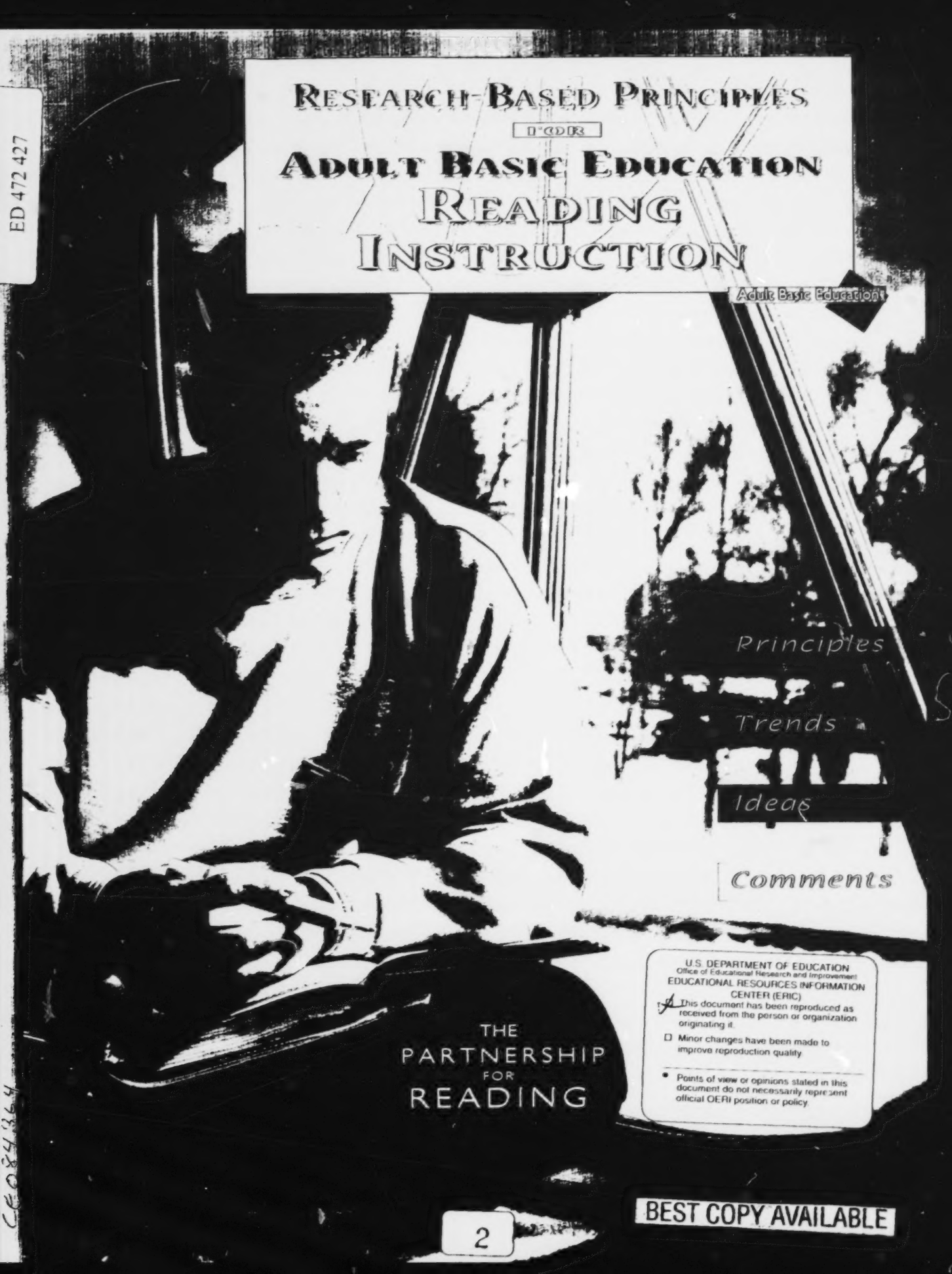

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THE PARTNERSHIP FOR READING

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Research-Based Principles for Adult Basic Education Reading Instruction

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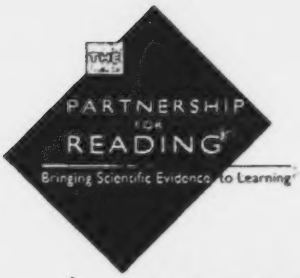

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The National Institute for Literacy

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September 2002

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The National Institute for Literacy, an independent federal organization, supports the development of high quality state, regional, and national literacy services so that all Americans can develop the literacy skills they need to succeed at work, at home, and in the community.

The Partnership for Reading, a project administered by the National Institute for Literacy, is a collaborative effort of the National Institute for Literacy, the National Institute of Child Health and Human Development, the U.S. Department of Education, and the U.S. Department of Health and Human Services to make scientifically based reading research available to educators, parents, policy makers, and others with an interest in helping all people learn to read well.

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The Planning Committee of the Reading Research Working Group developed the original conceptual framework that remained largely intact throughout. Above and beyond the comments and advice offered by members of the RRWG, Mary E. Curtis and Dolores Perin helped with the important task of describing the organizing categories and subcategories identified by the RRWG. Dolores Perin also wrote drafts of some of the criteria that were used with qualitative research. Peggy McCardle of the National Institute of Child Health and Human Development helped extensively with language related to research methodology and research findings. John Strucker tirelessly participated in several RRWG meetings as well as many informal discussions.

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Preface

The Partnership for Reading is pleased to present ***Research-Based Principles for Adult Basic Education Reading Instruction***. The Partnership, an initiative of the National Institute for Literacy, the U.S. Department of Education, the National Institute of Child Health and Human Development, and the U.S. Department of Health and Human Services, disseminates scientifically based reading research to inform reading instruction from birth through adulthood. This publication adds to a growing body of materials, begun with the release of ***Put Reading First: The Research Building Blocks for Teaching Children to Read***, that summarize the research and make connections to reading instruction in formal and informal learning environments.

This book represents the work of The Reading Research Working Group, a panel of experts on reading research and practice convened by the Institute and the National Center for the Study of Adult Learning and Literacy to identify and evaluate existing research in adult literacy reading instruction and provide a summary of scientifically based principles and practices. This work was similar to that done by the National Reading Panel whose findings, published in ***Report of the National Reading Panel: Teaching Children to Read***, have refocused how reading instruction is conducted from kindergarten to grade 3.

This publication represents the best information available about how adults learn to read. It is designed to serve two primary audiences: educators and policy makers who make decisions about the content of adult basic education reading instruction and researchers eager to identify new avenues of study to add to our understanding of this field. The Partnership invites readers to use this rich collection of findings to inform their work with adults.

Executive Summary

The Reading Research Working Group (RRWG), a panel of experts on adult reading research and practice, was established by the National Institute for Literacy (NIFL) in collaboration with the National Center for the Study of Adult Learning and Literacy (NCSALL). It is part of the Institute's efforts to provide educators, parents, and others with access to scientifically based reading research, including research-based tools for improving literacy programs and policies for children, youth, and adults, through the Partnership for Reading.

The purpose of the RRWG was to identify and evaluate existing research related to adult literacy reading instruction in order to provide the field with research-based products including principles and practices for practitioners. This document presents findings from an analysis of the adult basic education (ABE) reading instruction research base and is designed as a resource for practitioners and reading researchers. It focuses on ***principles*** that can be derived from the research and a research agenda for the future.

For the purposes of the RRWG, "adult reading instruction research" is defined as research related to reading instruction for low-literate adults, aged 16 and older, who are no longer being served in secondary education programs. This includes low-literate adults in community-based literacy centers, family literacy programs, prison literacy programs, workplace literacy programs, and two-year colleges. It includes research related to all low-literate adults in these settings, including adults in ASE (Adult Secondary Education) programs, ESOL (English for Speakers of Other Languages) programs, and adults with a learning or reading disability.

Evaluating the Research

Two recent reports were influential in guiding the work of the RRWG: ***Preventing Reading Difficulties in Young Children*** from the National Research Council of the National Academy of Sciences and ***Report of the National Reading Panel: Teaching Children to Read***. The guidelines used for selecting and evaluating ABE reading instruction research are based on those developed by the National Reading Panel (NRP) in their review of research related to reading instruction with children (National Reading Panel, 2000a). For the NRP review, major topics for study were established, studies were located through a literature search, and studies were evaluated using a set of "evidence-based methodological standards."

The RRWG made several modifications to the approach used by the NRP. Important modifications included the addition of topics especially important to adult reading professionals, the inclusion of studies related to the assessment of reading ability, and the inclusion of non-experimental studies as well as those involving the use of control groups.

Like the NRP, the major topics selected for study by the RRWG are those components of reading found by the National Research Council and others to be crucial during reading instruction: alphabetics (phonemic awareness

and word analysis), fluency, vocabulary, and comprehension. The ultimate goal in reading is ***comprehension***. Readers read a text in order to understand and use the ideas and information contained in it. Comprehension is improved when readers understand the key concepts or ***vocabulary*** in a text. Reading comprehension may suffer, however, when readers are unable to recognize individual words in a text. A reader may be conceptually ready to understand a text, for example, but will not have the opportunity to do so if he or she cannot read the individual words. To read individual words, the reader must know how the letters in our alphabet are used to represent spoken words (***alphabetics***). This includes knowing how words are made up of smaller sounds (***phonemic awareness***), and how letters and combinations of letters are used to represent these sounds (***phonics*** and ***word analysis***). The ability to figure out how to read individual words, however, is not sufficient. Readers must also be able to rapidly recognize strings of words as they read phrases, sentences and longer text. ***Fluent reading*** is crucial to adequate comprehension.

Effective reading and reading instruction cannot occur without sufficient motivation. Motivation is one of the additional topics selected by the RRWG for study, along with others that are especially important for adult reading instruction: computer technology, reading assessment, program goals and setting (family literacy, workplace literacy, and general functional literacy), instructional methods (strategies, material, teacher preparation, and the intensity and duration of instruction), and specific characteristics of learners that affect instruction (reading level, whether English is their first language, the existence of a learning disability, and motivation).

Use of K-12 Research

One task for the RRWG was to identify gaps in the ABE reading research and to consider how these gaps might be addressed. What research is needed and, of more immediate concern, where should the ABE instructor look for suggestions on the best ways to teach reading to ABE learners when the ABE research has not yet addressed a topic? One strong recommendation from the RRWG was to look to the NRP results for K-12 (elementary and secondary school) students, selecting those approaches to reading instruction that were likely to work with adult learners. To do this, the RRWG established criteria for evaluating the application of K-12 reading research to adult reading instruction. These criteria take into account the existing ABE research, the important differences between children and adults, and the strengths and weaknesses of K-12 research in each of the topic areas. NRP findings were used to help fill gaps in the ABE reading instruction research, to provide support when K-12 and ABE research were compatible, or to signal caution when they were contradictory.

A Brief Summary of Findings from the Research Review

Most of the principles derived from the ABE reading instruction research are "emerging principles" because they are based on a relatively small body of experimental research. There is much more research focusing on children, as demonstrated in the report of the National Reading Panel. The small size of the ABE reading

instruction research base precludes establishing more than just a few principles based solidly on large numbers of research studies that have been replicated. Some of the topic areas reviewed contain no or very few research studies. This does not necessarily suggest that the quality of ABE reading instruction research is poorer than K-12 reading instruction research or other bodies of research, only that there is less of it.

Approximately 70 qualifying research studies were identified in the literature search based on the criteria used. From the results reported in these studies, eighteen emerging research-based principles and related practices for ABE reading instruction were identified, along with thirty-two additional trends in the ABE research. Twenty-two specific ideas that might be used to supplement the ABE research were derived from the K-12 research. Emerging ***principles*** were based on findings from at least two experimental studies (including quasi-experimental studies) and any number of non-experimental studies. Findings based on fewer than two experimental studies were labeled ***trends*** rather than principles.

Findings from the adult reading instruction research show that adults can have difficulties with any of the crucial aspects of reading: alphabetics (phonemic awareness and word analysis), fluency, vocabulary, or comprehension. It is important to assess adult students' abilities in each of these areas in order to identify what they already know as well as what they need to work on during instruction. Assessment for instructional purposes is one the first tasks a teacher performs. One emerging principle in the ABE research suggests that assessing each component of reading in order to generate profiles of students' reading ability gives teachers much more instructionally relevant information than any test of a single component can.

Some of the strongest ABE reading instruction research has to do with the assessment of adults' phonemic awareness. Phonemic awareness among adult non-readers is almost non-existent and is only a little better among adult beginning readers. Adult beginning readers also have poor phonics or word analysis knowledge. Their sight word knowledge (the ability to recognize words on sight without having to sound them out) may initially be better than expected. Research evidence indicates that adults can be taught word analysis skills within ABE programs and, though the evidence is not as strong, that non-disabled readers can be taught phonemic awareness. Trends in the research suggest that phonemic awareness does not develop as easily among adults with a reading disability.

Teaching alphabetics leads to improved achievement in other aspects of reading. This emerging principle in the adult research is supported by research conducted with children. Research at the K-12 level, unlike ABE research, has identified specific practices that can be used to teach alphabetics. Many of these K-12 practices address topics that are especially important for ABE learners. No research was found related to the alphabetics ability of learners in ESOL adult basic education programs (programs that teach English to speakers of other languages).

There is very little research that reports results from the assessment of ABE students' fluency and vocabulary. We do know that young adults with poor fluency have an average silent reading rate that is much slower than that of normal readers. Emerging principles in the ABE research indicate that fluency can be taught to adults

who qualify for ABE programs, that teaching fluency leads to increases in reading achievement, and that one specific technique can be used to help adults develop their reading fluency. This technique, repeated readings of a text, is also supported by a much larger body of research with children.

The one trend related to the assessment of ABE readers' vocabulary suggests that their vocabulary knowledge is dependent on reading ability. Although, as might be expected, their life experience can give them an advantage as they begin to learn to read (their vocabulary knowledge is much better than their knowledge of alphabetics), this advantage may disappear at higher reading levels. An important trend from the instruction research, supported by research with children, is that contexts that are more interesting or engaging, such as workplace or family contexts for adults, may be especially useful for vocabulary instruction.

Reading comprehension is the ultimate goal for reading. A large-scale national survey of adult literacy provides information about adults' reading comprehension that is more reliable than the information we have about their fluency and vocabulary. Results from this survey indicate that most ABE learners have difficulty integrating and synthesizing information from any but the simplest texts. Although it is likely that poor phonemic awareness, word analysis, fluency, and vocabulary contribute to poor reading comprehension, it is also likely that most ABE adults will need to be taught specific comprehension strategies. Those adults with a learning disability and those whose first language is not English are especially at risk. Although there are more principles and trends related to ABE reading comprehension instruction than for alphabetics, fluency, or vocabulary instruction, the research does not address issues related to these adults.

Three important emerging principles from the ABE reading research suggest that participation in an ABE program can lead to increased reading comprehension achievement, that explicit instruction in reading comprehension strategies is effective, and that teaching comprehension along with instruction in other components of reading is also an effective way to improve reading comprehension. The effectiveness of reading comprehension strategy instruction is supported by extensive research with children. In addition, K-12 research has identified eight specific strategies that may be of use to adult educators and also finds that instruction in other aspects of reading can lead to improved comprehension.

Trends in the ABE reading comprehension research also address several issues that are important to adult literacy students and teachers. Although more research is needed, these trends suggest that comprehension can be improved in most ABE settings, including workplace and family literacy settings; use of adult-oriented content material is an effective way to help improve comprehension; and, dealing briefly but directly with issues related to motivation and how adults feel about their reading can have a positive effect.

In general, the review of ABE reading instruction research found that much more research is needed in almost all of the topic areas addressed. Of the existing research, assessment research is the strongest. Emerging principles suggest that reading can improve in ABE settings, that direct or explicit instruction in various

components is effective, and that computer-assisted instruction can improve achievement in some aspects of reading. Basic information about the reading ability of ABE learners is known and fairly sophisticated methods for obtaining assessment information and using it for instruction have been developed. Much more information is needed about ESOL learners and adults with reading disabilities. More information about specific teaching strategies is also needed. With the exception of fluency, specific teaching strategies validated by the research are just beginning to emerge. Also beginning to emerge are findings of special significance for adult educators related to adult-oriented settings and contexts, and issues of motivation and the feelings that result from continued failure in learning to read.

While K-12 research does not address these more adult-oriented issues with the same urgency, the much larger body of reading instruction research conducted with children is compatible with the ABE reading instruction research, offering both support for many ABE findings and specific suggestions for instruction in areas where the ABE research is thin.

Introduction

The Reading Research Working Group (RRWG) was formed to identify and evaluate existing research related to adult literacy reading instruction in order to provide the field with research-based products, including principles and practices for researchers and professionals. This report presents results from an analysis of the adult basic education (ABE) reading instruction research base, focusing on principles that can be derived from the research and a research agenda for the future. Practices based on these principles are presented at the Partnership for Reading web site, www.nifl.gov/partnershipforreading.

The RRWG is sponsored by the National Institute for Literacy (NIFL) in collaboration with the National Center for the Study of Adult Learning and Literacy (NCSALL). It is part of the Institute's efforts to provide educators, parents, and others with access to scientifically based reading research, including research-based tools for improving literacy programs and policies for children, youth, and adults, through the Partnership for Reading (see the Appendix for a description of the Partnership). A primary goal for developing the principles is to provide those in family literacy programs and other ABE settings with research-based methods for facilitating the intergenerational transfer of literacy by improving the literacy abilities of adults.

The RRWG is a panel of experts in the field of adult literacy research established by NIFL and NCSALL in order to:

- Identify research related to adult reading instruction in the field of adult literacy that is "scientifically based" as defined in the Reading Excellence Act. (Definitions from the REA are provided in the Appendix.)
- Prioritize the research in terms of its relevance and importance for literacy instruction at the adult level
- Identify gaps in the research
- Come to a consensus on a list of research-based principles and practices for adult literacy reading instruction that can then be disseminated to adult literacy practitioners
- Identify the best ways to disseminate the research-based principles and practices.

For the purposes of the RRWG, "adult reading instruction research" is defined as research related to reading instruction for low-literate adults, aged 16 and older, who are no longer being served in secondary education programs. This includes low-literate adults in community-based literacy centers, family literacy programs, prison literacy programs, workplace literacy programs, and two-year colleges. It includes research related to all low-literate adults in these settings, including adults in ASE (Adult Secondary Education) programs, ESOL (English for Speakers of Other Languages) programs, and adults with learning or reading disabilities.

Four meetings of the RRWG were held to develop and review draft principles and practices. Major steps in the process used to develop the research-based principles were:

- ***A meeting of a RRWG planning committee.***
  Criteria for selecting research studies were developed, based on definition provided in the Reading Excellence Act and other related documents (see the Appendix). This committee also developed a preliminary list of research topics, existing research strands, and specific research articles. It explored ways in which the research might be organized, suggested formats for principles and practices derived from the research, and suggested methods for the dissemination of principles and practices.
- ***Preparation of a draft set of principles.***
- ***A meeting of a RRWG researchers committee.***
  This committee used the draft set of principles to review and prioritize relevant research, develop a comprehensive list of principles and practices based on the research, and suggest methods for dissemination.
- ***Revision of the draft set of principles.***
- ***A meeting of a RRWG practitioners committee.***
  This committee used the draft set of principles to review the principles and practices and to suggest best formats and venues for the dissemination of the principles and practices.
- ***Preparation of a separate document for ABE professionals.***
- ***A meeting of a small RRWG practitioner-researcher committee.***
  This committee of experts, each of whom is involved in both research and practice, met to review and revise the d aft professional's document.
- ***Final revisions of a researcher document and a practitioner document and preparation of one document for dissemination.***

How This Report Is Organized

The second section of this report, following the Introduction, presents the methods used to select and evaluate research related to Adult Basic Education (ABE) reading instruction. The methods used in this review place a premium on experimental research studies. Ideally, these studies objectively compare groups of learners receiving different forms of reading instruction and use statistical procedures to help determine how likely it is that one approach is significantly different from another. These studies are designed to increase our confidence in drawing conclusions about the effectiveness of a particular approach to instruction. This review uses non-experimental reading instruction research to support principles or trends based on experimental studies and to note promising directions that ABE reading instruction research may be taking.

The third section contains a list of findings from the research: the ***principles, trends, ideas,*** and ***comments*** that appear in the major sections of the report. This list of principles, trends, ideas, and comments serves as an index to the ABE and K-12 reading instruction research findings presented in the main sections of the report.

Principles	Principles are the strongest statements made about ABE reading instruction in this review and are based on findings from two or more experimental studies and any number of non-experimental studies.
Trends	Trends are based on fewer than two experimental studies.
Ideas	Ideas for ABE reading instruction are based on a thorough review of reading instruction research at the K-12 level (National Reading Panel, 2000a, 2000b) and help to fill the gaps in the ABE reading instruction research base.
Comments	Comments are weaker, less conclusive findings from the K-12 research.

Most of the principles derived from the ABE reading instruction research might be considered "emerging principles" because they are based on a relatively small body of experimental research. There is much more reading instruction research focusing on the K-12 level, both experimental and non-experimental, as demonstrated in the report of the National Reading Panel (NRP) (2000a, 2000b). The small size of the ABE reading instruction research base precludes establishing more than just a few principles based solidly on large numbers of research studies that have been replicated. Some of the topic areas reviewed contain no or very few research studies. This does not necessarily suggest that the quality of ABE reading instruction research is poorer than K-12 reading instruction research or other bodies of research, only that there is less of it. The relative quality of the ABE experimental research base is the subject for another review, one that looks at the relative ratio of experimental to non-experimental studies in various fields, for example, or that analyzes the relative quality of methods used.

The main sections of the report focus on the major aspects of reading instruction: assessing students in order to describe their reading "profiles" or overall reading ability, alphabetics instruction, fluency instruction, vocabulary instruction, and reading comprehension instruction. Computer technology also forms a section. Assessment of student strengths and needs in reading is presented first because it is one of a teacher's first tasks. Sections on the major components begin with alphabetics and end with comprehension. This corresponds to the movement from smaller units of instruction to larger ones, and also from those aspects of the reading process that are considered "enabling" (alphabetics and fluency) to those that are considered the ultimate goal in reading (vocabulary and comprehension) (Snow, Burns, & Griffin, 1998; NRP, 2000a).

Although each component is covered in a separate section of the report, this does not mean that they should be taught separately. In fact, research suggests they need to be taught together for instruction to be truly effective (Snow et al., 1998; NRP, 2000a). Although research may attempt to isolate effective instructional approaches or aspects of effective instruction, this does not imply that only one approach should be used or that instruction should focus on only one aspect of reading.

Each of the main sections of the report presents (a) a description of the major aspect of reading covered in a section, including a ***definition*** and ***rationale*** and, when appropriate, how a reading component is ***assessed***,

(b) major ***questions*** related to ABE reading instruction associated with specific topics of interest to ABE practitioners, (c) answers to these questions in the form of ***emerging principles*** or ***trends*** when the questions have been addressed by the research, (d) a short ***summary of the research*** related to each principle or trend, and (e) ***ideas*** (and ***comments***) for ABE reading instruction derived from K-12 reading instruction research.

Subtopics important to ABE reading instruction, identified by the RRWG, are listed in the left column in the following table. These form subsections in the report. All subsections are shaded in the table.

REPORT ORGANIZATION

SECTION TITLES IN THE REPORT

Section Contents	Assessment Profiles	Alphabetics PA	Alphabetics WA	Fluency	Vocab	Comp	Tech
Assessment of Component							
All adults							
Adults with LD							
ESOL Adults							
Instruction							
Overall							
Goals and Setting							
General literacy							
Workplace literacy							
Family literacy							
Methods & Material							
Teaching strategies							
Instructional materials							
Intensity and duration							
Teacher preparation							
Learner Characteristics							
Functional reading level							
ESOL							
Learning Disability							
Motivation							

PA=Phonemic Awareness, WA=Word Analysis, Vocab=Vocabulary, Comp=Comprehension, Tech=Computer Technology;

LD=Learning Disabilities, ESOL=English for Speakers of Other Languages

The final section of the report summarizes some of the more important findings and presents an agenda for future research based on these findings.

This review attempts to maintain a close link between the ABE reading instruction research base and the principles and practices that are derived from it. The statement of each principle or trend in the main sections includes citations that refer to relevant research studies. Studies that support a principle or trend are cited as well as those that may not. Citations for instructional studies with relevant experimental results, as defined in the methods section, are underlined, while citations for instructional studies with non-experimental results are not. Assessment studies, those studies that describe ABE learners' reading, are underlined if they use sound inferential statistical procedures, as described in the Methods section. Assessment studies that take snapshots of learners' reading abilities do not necessarily compare groups over time and therefore might not use an experimental design.

Some studies are cited more than once. These studies deal with more than one issue and are used to support more than one principle or trend. Because a study may have both experimental and non-experimental results, it is possible that its citation will be underlined in one instance (when its experimental results support a principle) and not in another (when its non-experimental results are used in support of a principle).

Use of K-12 Research

One task for the ABE Reading Research Working Group is to identify gaps in the ABE reading research and how these gaps might be addressed. Where should the ABE instructor look for suggestions on the best ways to teach reading to ABE learners when the ABE research has not yet addressed a topic? The National Reading Panel (NRP) has summarized reading instruction research results at the K-12 level (National Reading Panel, 2000a). One strong recommendation from the RRWG is to look to the NRP results for K-12 students, selecting for consideration those approaches to reading instruction that might also work with the ABE learner.

The findings or conclusions related to reading instruction from the NRP are used in this report in several different ways: (1) to provide support for tentative conclusions related to ABE reading instruction (when the findings from the NRP and those for adults are compatible); (2) to signal caution when the findings are not compatible; and, (3) to help "fill in gaps" in the ABE reading instruction principles where no or very few research-based results are available. The guidelines used in selecting K-12 instructional practices that might be used with adults are presented in the Methods section.

Applying research from the K-12 level to adults is largely speculative, especially in areas where there is little existing ABE research. Nevertheless, a convincing argument can be made for the use of K-12 results with adults when no research-based practices exist at the adult level. Until there is a larger body of ABE research, ABE instructional practices must move ahead without being informed by ABE research. Those practices based on a strong, carefully synthesized K-12 research base may provide the best source of promising ideas for instruction

with adults. It should be remembered, however, that ABE is different from K-12 education in ways that have the potential to affect reading instruction outcomes: adults are older; ABE is not mandatory and adult attendance may not be as consistent; adults cannot spend hours each week on reading instruction, as do children; adults and children may bring different strengths and weaknesses to reading instruction; and, adults have different interests so that approaches that appeal to children may not appeal to adults.

Method

The guidelines used for selecting and evaluating ABE reading instruction research are based on those developed by the National Reading Panel (NRP) in their review of research related to reading instruction at the K-12 level (National Reading Panel, 2000a, pp. 5-6, 27-33). For the NRP review, major topics for study were established, studies were located through a literature search, and studies were evaluated using a set of "evidence-based methodological standards" (NRP, 2000a, p. 2). The RRWG made several modifications to the approach used by the NRP. Important modifications included the addition of topics especially important to adult reading professionals, the inclusion of studies related to the assessment of reading ability, and the inclusion of non-experimental studies as well as those involving the use of control groups.

Selecting Topics

Following the lead of the NRP, core topics are based on those aspects of reading found by the National Research Council (NRC) and others to be most important in learning to read: alphabetics, fluency, and comprehension (NRC, p. 2; Snow, Burns, & Griffin, 1998). After the topics were discussed among members of the RRWG planning committee and researcher group, additional topics important to the field of ABE were added to the core categories. All topics are listed below.

A. Instructional Focus

1. alphabetics instruction (including phonemic awareness and word analysis)
2. fluency instruction
3. vocabulary instruction
4. comprehension instruction

B. Instructional Goals and Setting

1. general functional literacy instruction
2. workplace literacy instruction
3. family literacy instruction

C. Instructional Methods and Material

1. teaching strategies and techniques used for reading instruction
2. instructional materials used for reading instruction
3. technology and reading instruction
4. intensity and duration of reading instruction
5. teacher preparation and reading instruction

D. Learner Characteristics

1. functional reading level and reading instruction
2. ESOL and reading instruction
3. learning disability and reading instruction
4. motivation and self-esteem and reading instruction

E. Assessment of Learners' Strengths and Needs for Reading Instruction

Selecting Studies for Inclusion

Four main sources were used to locate relevant research articles: The PsychINFO and ERIC databases, reference lists from relevant articles, and recommendations from adult literacy researchers for relevant research articles that may have been missed in the database searches.

To determine whether or not a study should be included in the review, the following criteria were used.

A. A study must focus on ABE learners' reading development. ABE students are those low-literate adults aged 16 and older who are no longer being served in a secondary education program (Adult Education and Family Literacy Act, Title II of the Workforce Investment Act, PL105-220, 1998). This would include adults scoring on Levels 1 and 2 of the reading test developed for the National Adult Literacy Survey (Kirsch, Jungeblut, Jenkins, and Kolstad, 1993), or those with grade equivalent scores of K through 12 on a test of reading.

B. A study must include reading as an outcome measure. Reading outcome measures used by the NRP include reading real words in isolation or in context, reading pseudowords that can be pronounced but have no meaning, reading text aloud or silently, and comprehending text that is read silently or orally, including both individual vocabulary words and extended text (NRP, 2000a, p. 5).

C. Studies published in refereed (peer-reviewed) journals are given the highest priority. These journals' editors select an editorial board and other independent peer reviewers who use a common set of criteria to review studies submitted for publication. Based on reviewer comments, the editors select articles for publication. The reviews are usually "masked" (information about authors is not provided) and help to insure that only studies without major flaws are published. Articles from non-peer-reviewed journals are reviewed separately and "treated as preliminary/pilot data that illuminate potential trends and areas for future research" (NRP, 2000a, p. 29). In addition, only five non-journal sources have been selected for inclusion. Two of these were selected because they describe in more detail data referred to in journal articles. The others report results from three national surveys of adults (the National Assessment of Educational Progress Young Adults Survey and the National Adult Literacy Survey in the United States, and a large survey in Britain).

D. A study must contain a full description of outcome measures.

E. A study must contain careful and complete descriptions of the adults participating (age, demographic, cognitive, academic, and behavioral characteristics) and must contain enough information to make judgments related to validity (NRP, 2000a, p. 28).

F. Any interventions (and assessment procedures) used in a study must be described in sufficient detail to enable the study to be replicated.

G. Results from intervention studies using an experimental or quasi-experimental design are given highest priority. These are both referred to as experimental results. Experimental results must be based on valid comparisons between groups with differences between groups tested statistically for significance. Correlational and other non-experimental results may be used to support experimental studies in a topic area, or as preliminary/pilot data if no experimental data exist in a topic area.

H. Non-experimental results from qualitative studies must be based on a sound analytical framework. Qualitative reading research focuses on literacy processes as opposed to quantifiable, numerical data related to growth in reading. The following description of qualitative research is paraphrased from the Handbook of Qualitative Research (Denzin & Lincoln, 2000, pp. 3-8): Qualitative research includes case study; personal experience; introspection; life story; interview, artifacts and cultural productions; and observational, historical and visual texts. It is not defined by any distinct set of methods or practices. It includes ethnography, interviews, survey research, and participant observation. It emphasizes the qualities of entities, and processes and meanings that are not experimentally examined or measured (if measured at all) in terms of quantity, amount, intensity or frequency. It emphasizes the socially constructed nature of reality, the intimate relationship between the researcher and what is studied, the situational context that shapes the inquiry, and the value-laden nature of inquiry. In contrast, quantitative research measures and analyzes causal relationships between variables, not processes, and claims a value-free framework.

Like quantitative-descriptive research, qualitative research may be used to support results from experimental studies (and vice versa). Qualitative research may employ multiple methods and so, as Denzin & Lincoln (2000) state, may include the use of quantitative measures, although these are not the focus of the research. In cases where a qualitative research study includes numerical analyses of data, these may be categorized according to the quantitative framework described above. The highest quality qualitative studies are those that collect data using multiple methods and use triangulation of these methods to support findings and any conclusions drawn from them. For techniques such as data coding (whether from transcripts, video tapes, or field notes), training and inter-rater/coder reliability should be performed.

Only a few qualitative studies have been selected and all are case studies of individual adult learners. Other non-experimental results selected include only those studies with comparisons made between two groups, or comparisons made of one group at two or more points in time.

I. Correlational and other non-experimental results are appropriate when considering studies in the Assessment category. Assessment studies may simply describe ABE students' reading, unlike instructional

studies which look for change over time resulting from some aspect of instruction. In assessment studies, planned comparisons between groups over time may not be appropriate. Assessment studies using adequate sampling procedures and inferential statistics when appropriate to analyze data are given highest priority and the same weight as experimental studies.

As mentioned in the introduction, results from the NRP K-12 research synthesis are used, when appropriate, to support and augment findings from the ABE reading instruction research base. Criteria used for including NRP findings are listed below, roughly in the order they are used, with those listed first given a higher priority:

A. The instructional research at the K-12 level supports limited, research-based findings at the adult level.

B. The instructional approach derived from K-12 research can plausibly be used with adults. This "plausibility criterion" is needed so that research-based results that may be effective at the K-12 level are not blindly applied to adults. For example, research may demonstrate that a particular entry-level basal reader is extremely effective with children, but this research result may not necessarily lead to a recommendation that the basal reader be used in an adult workplace literacy program.

C. The instructional approach derived from K-12 research is based on a strong body of evidence. The stronger the result at the K-12 level, the more likely it is to eventually be shown to be effective at the adult level. Strength can be measured along two dimensions: depth and breadth. A finding has depth when it has been replicated and the effects summarized over replications are strong. The NRP, for example, defines a strong finding as one for which statistically derived effect sizes are moderate to large. A finding has breadth when it applies to a wide range of conditions. These conditions may be related to the learners, for example. A broad finding would be one that holds for learners at different age or ability levels. A finding may hold for various instructional settings or conditions, such as in- or out-of-school settings, small group, classroom, or tutoring situations, various subject or content areas, or different levels of teacher preparation or expertise. The same finding may result regardless of the types of assessment used (informal or formal, for example). A finding that has both depth and breadth is probably one that could be tried with adults, absent research-based direction at the adult level.

D. The instructional approach has been shown to work at the K-12 level with those who have not followed normal age and ability level development in their reading. Adults in ABE programs are, in a sense, "out of grade level." They may be working on skills that others (and they themselves) worked on as elementary or high school students. They are older learners of specific reading skills. They may also be more likely to have a reading disability (Snow & Strucker, 2000). Therefore, those results at the K-12 level that apply to reading disabled or relatively older students may be of interest to adult educators. Instructional practices that work with younger disabled readers, those who have received instruction but whose reading is well below average, may be of use to adult educators working with adults who are also older and well below average in their reading ability.

Deriving Principles

Principles were derived from qualifying research studies by first placing the studies into the categories identified by the RRWG, based on reading outcome measures and independent variables. Studies with common themes within each category were grouped together and their results were summarized as succinct principles or trends.

Findings from groups of studies that contained two or more experimental studies with compatible results (and any number of non-experimental studies) were labeled principles. Findings based on fewer than two experimental studies were labeled trends. Non-experimental findings were used as convergent evidence for the Trends and Principles. In the assessment categories, assessment studies with adequate sampling procedures and inferential statistics were given the same weight as experimental studies.

Exceptions to the above were made for the most recently published national, large-scale studies of adults learners, including the National Adult Literacy Survey (Kirsch et al., 1993), the NAEP (National Assessment of Educational Progress) study of young adults (Gallo, 1972), and the NFER (National Foundation for Educational Research) study in Britain (Brooks, Davies, Ducke, Hutchison, Kendal, & Wilkin, 2001). In the case of results from the NALS, for example, some principles were based on results from the NALS alone because the sampling procedures used allowed the generalization of findings to the whole adult population.

All except a few of the principles derived from the research might be considered "emerging principles" because they are based on a relatively small body of experimental research.

List of Emerging Principles, Trends, Ideas, and Comments

Research-based findings for adult basic education (ABE) reading assessment and instruction are listed on the following pages, along with findings from the National Reading Panel (NRP) review of related K-12 research. These findings are taken from the main sections of this report, where each is discussed and citations to relevant research are presented.

In the following list, as in the main section of the report, the findings are presented for each major component of reading instruction: alphabetics (phonemic awareness and word analysis), fluency, vocabulary, and reading comprehension. There is also a list for computer technology. Although each component of instruction has its own list of findings, it is assumed that teachers will address all major components in teaching sessions with students.

Findings from the research are divided into four categories: principles, trends, ideas, and comments. These categories signal the type of research used to support each finding.

Principles Principles are based on results from at least two experimental studies and any number of non-experimental studies. Because most are based on just a few experimental studies, they should be considered emerging principles.

Trends Trends related to instruction do not have as much support in the ABE research base as Principles. They are based on fewer than two experimental studies and any number of non-experimental studies.

Ideas Ideas for instruction are based on very strong findings from research with children at the K-12 level.

Comments Comments about instruction also come from the K-12 research but do not have as much support in the research as Ideas because they are based on fewer research studies.

Principles, trends, ideas, and comments are grouped together by the reading topics in the lists that begin on the next page. Topics for which there are no principles, trends, ideas, or comments are not listed.

Emerging Principles, Trends, Ideas, and Comments

Reading Assessment Profiles

Principle 1: When measures of achievement are obtained for each crucial aspect of reading instruction (alphabetics, fluency, vocabulary, and comprehension), instructionally relevant patterns of scores, or profiles of adults' strengths and needs in reading, may be observed. These profiles suggest that ABE readers, including those in ESOL programs and those with a reading disability, are very diverse and that any one measure of reading achievement may not be sufficient to identify strengths and needs for instruction.

Alphabetics

Assessment/Overall

Principle 2: Adult non-readers have virtually no phonemic awareness ability and are unable to consistently perform, on their own, almost all phonemic awareness tasks.

Principle 3: Adult beginning readers, like all beginning readers including children, perform poorly on phonemic awareness tasks that require phoneme manipulation. The ability to perform more complex operations with phonemes generally increases (in adults without a reading disability) along with reading ability, until word analysis is established.

Principle 4: Adult beginning readers, like other beginning readers, have difficulty applying letter-sound knowledge in order to figure out new or unfamiliar words while reading, although they are generally better at recognizing familiar sight words than children who are learning to read.

Trend 1: On phonemic awareness tasks, adult beginning readers are not as good as reading-matched children (children progressing normally in their reading who are reading at the same level as the adults). Adult beginning readers' phonemic awareness (PA) abilities may be more like those of children who are poor readers.

Trend 2: The basic PA abilities of adults who learn to read at an older age are not different from adults who learn to read at a younger age.

Assessment/Learning Disability

Trend 3: While readers will typically develop phonemic awareness as they learn to read, adults with a learning disability in reading, such as dyslexia, may not; dyslexia tends to persist into adulthood and may be related to a functional disruption in the brain.

Instruction/Overall

Principle 5: Participation in ABE programs may lead to increases in adult beginning readers' word analysis abilities.

Trend 4: Participation in adult education may lead to increases in adult beginning readers' phonemic awareness.

Principle 6: Phonemic awareness and/or word analysis instruction may lead to increased achievement in other aspects of reading for adult beginning readers.

Instruction/Goals and Setting

Trend 5: It may be possible to increase word analysis achievement in a family literacy setting.

Instruction/Methods and Material—Teaching Strategies

Principle 7: Word analysis may be taught using approaches that include direct instruction in word analysis along with instruction in other aspects of reading.

Trend 6: With adult readers at the intermediate level (reading around GE 6), a meaning-based diagnostic-prescriptive approach to teaching may not lead to increased word analysis achievement.

Ideas for Alphabetics Instruction From K-12 Research

Goals and Setting

Idea 1: Most students in ABE literacy programs are from lower socioeconomic levels, and PA training and systematic phonics instruction may be effective with adults from these settings.

Methods and Material—Teaching Strategies

Idea 2: To teach phonemic awareness skills to ABE beginning and intermediate readers, provide focused and explicit instruction on one or two PA skills rather than teaching a combination of three or more skills. Focusing on two skills in particular, blending and segmenting, may be most effective.

Idea 3: To teach phonemic awareness skills to ABE beginning and intermediate readers, teach students how to manipulate phonemes (e.g., how to blend and segment words) using letters rather than using only oral instruction.

Idea 4: To improve ABE beginning and intermediate readers' ability to decode regularly spelled words and read familiar sight words, teach phonemic awareness.

Idea 5: To teach decoding of regularly spelled words and recognition of irregularly spelled sight words to adult beginning and intermediate readers, use systematic as opposed to non-systematic phonics instruction.

Idea 6: To teach decoding of regularly spelled words and recognition of irregularly spelled sight words to adult beginning and intermediate readers, use systematic programs that focus on individual phonemes or that focus on larger parts of words.

Idea 7: To teach word recognition, use fluency instruction (repeated readings and guided oral reading, for example) to supplement regular word recognition instruction.

Methods and Material—Instructional Materials

Idea 8: Computer programs may be useful in teaching PA skills to adult beginning and intermediate readers.

Methods and Material—Intensity and Duration

Idea 9: To teach adult beginning and intermediate readers PA, individual instruction, small group instruction, and classroom instruction may be used, though small group instruction may be most effective.

Idea 10: When teaching adult beginning and intermediate readers PA, too much as well as too little PA instruction may be ineffective.

Learner Characteristics-Functional Reading Level

Idea 11: PA training may be most effective if provided immediately to adult non-readers and those just beginning to learn to read. Special PA training may be needed for adult beginning readers who are a little more advanced in their reading (reading at or above GE 1).

Learner Characteristics-Learning Disability

Idea 12: Although the same PA training that is useful for non-disabled readers may be effective for disabled readers, special PA training may be needed for adult beginning and intermediate readers who have a reading disability.

Idea 13: Use systematic phonics programs with reading disabled adult beginning readers, the same programs that are effective with non-disabled readers.

Fluency

Assessment

Principle 8: Fluency is an issue for adult beginning readers, intermediate readers, and perhaps for those reading at more advanced ABE levels. There are very large differences between adults with good and poor reading fluency, and adult beginning readers' fluency is similar to the fluency of children who are beginning readers.

Instruction/Overall

Principle 9: Fluency may be taught to ABE students and fluency practice may lead to increases in reading achievement.

Instruction/Methods and Material—Teaching Strategies

Principle 10: Fluency may be taught using approaches that include the repeated reading of passages of text, words from texts, and other text units.

Ideas for Fluency Instruction From K-12 Research

Methods and Material—Teaching Strategies

Idea 14: To improve ABE readers' fluency (as well as word recognition and reading comprehension achievement), use repeated guided oral reading procedures.

Idea 15: Encouraging adults to read independently more often may not lead to improvements in reading achievement without other forms of reading instruction.

Idea 16: Use systematic phonics instruction (as opposed to non-systematic or incidental phonics instruction) to improve adult beginning readers' reading fluency.

Learner Characteristics–Functional Reading Level

Idea 17: Most ABE learners receiving reading instruction could be classified as poor readers. Fluency instruction may be especially effective for improving poor readers' reading achievement, regardless of their reading grade equivalent.

Vocabulary

Assessment

Trend 7: ABE readers' vocabulary growth may be dependent upon reading ability. Although their life experience may give them an advantage on vocabulary knowledge at lower reading levels, this advantage may disappear at higher reading levels.

Instruction/Goals and Setting

Trend 8: Teaching vocabulary within a family or workplace literacy program may lead to a greater increase in vocabulary achievement than instruction in other settings.

Instruction/Goals and Setting—General Functional Literacy

Trend 9: Teaching vocabulary within a general functional literacy program may lead to increases in vocabulary knowledge.

Instruction/Methods and Material—Teaching Strategies

Trend 10: Beginning readers' reading vocabulary may be increased using an approach that combines listening comprehension instruction in a content area, high-interest texts generated from listening compre-hension exercises, and phonics and multi-sensory skills work using the same content-oriented texts.

Instruction/Methods and Material—Intensity and Duration

Trend 11: Provided that participation in a program produces gains in vocabulary achievement, instruction that is longer in duration may lead to increases in reading vocabulary achievement.

Ideas for Vocabulary Instruction From K-12 Research

Goals and Setting

Comment 1: To help provide repeated exposure to new vocabulary, teach ABE learners new words that will be useful to them in workplace or family settings.

Methods and Material—Teaching Strategies

Comment 2: Encourage activities, such as wide reading, that will expose ABE learners to new vocabulary. Encouraging independent reading, however, assumes that what is read is read fluently (i.e., is at an appropriate reading level).

Comment 3: Pre-teach vocabulary words that ABE learners will encounter in texts being used for instruction.

Comment 4: Restructure the texts and procedures used for vocabulary instruction when necessary so that students understand what they need to do when reading and learning new words. Examples of restructuring include substituting easy words for hard ones, explaining what a good definition consists of, working in pairs, and selecting especially relevant words. Restructuring may be most effective with low-achieving students.

Methods and Material—Instructional Materials

Comment 5: Computer programs may be useful in teaching vocabulary to adults.

Learner Characteristics-Functional Reading Level

Comment 6: ABE vocabulary instruction should be appropriate for older students and tailored to their ability levels.

COMPREHENSION

ASSESSMENT/OVERALL

Principle 11: Adults who qualify for ABE have poor functional literacy comprehension achievement. Although theymay be able to perform simple comprehension tasks such as recalling ideas from simple stories and locating a single piece of information in a simple text, they are often unable to combine (integrate and synthesize) information from longer or more complex texts.

Trend 12: When different assessment instruments are used to measure gain in reading comprehension achievement, or when the same instrument is used at several points over the course of instruction, results related to reading comprehension achievement may be extremely variable. Some comprehension measures may be more reliable than others.

Trend 13: ABE adults' knowledge about reading, or their meta-comprehension, is more like that of children who are beginning readers. They are less aware than good readers are of strategies that can be used to monitor comprehension, view reading as decoding as opposed to comprehending text, and are less aware of the general structure of paragraphs and stories. They are aware of the influence of motivation, interest, and prior knowledge on reading.

ASSESSMENT/ESOL

Principle 12: ESL adults, on average, tend to have lower functional literacy comprehension achievement in English; the percentage of ESL adults among the ABE target population is greater than the percentage among the general adult population.

ASSESSMENT/LEARNING DISABILITY

Principle 13: Adults with a learning disability tend, on average, to have lower functional literacy comprehension achievement and are over-represented within the ABE target population.

INSTRUCTION/OVERALL

Principle 14: Participation in an adult literacy program may lead to an increase in reading comprehension achievement.

Trend 14: Change in reading comprehension achievement resulting from instruction may be extremely variable and any change observed may depend on the test used to measure achievement.

Instruction/Goals and Setting

Trend 15: In some situations, participation in a workplace literacy or family literacy program may lead to greater increases in reading achievement than participation in other types of programs.

Instruction/Goals and Setting—Workplace Literacy

Trend 16: It may be possible to increase reading comprehension in a workplace literacy program.

Instruction/Goals and Setting—Family Literacy

Trend 17: It may be possible to increase reading comprehension in a family literacy program.

Instruction/Methods and Material—General Functional Literacy

Trend 18: It may be possible to increase reading comprehension in a general functional literacy program.

Instruction/Methods and Material—Teaching Strategies

Principle 15: Providing explicit instruction in reading comprehension strategies may lead to increased reading comprehension achievement.

Principle 16: Combining comprehension instruction with instruction in various other components of reading may lead to increased reading comprehension achievement.

Trend 19: The degree to which a literacy program is learner-centered may differentially affect students at different ability levels.

Trend 20: With adult readers at the intermediate level (reading around GE 6), a meaning-based diagnostic-prescriptive approach to teaching may lead to increased reading comprehension achievement.

Trend 21: Requiring adults to attend a literacy program in order to receive welfare benefits may not increase reading comprehension achievement.

Trend 22: In programs where a teacher has assistance in the classroom, students may make greater gains in reading comprehension achievement.

Trend 23: Dealing briefly but explicitly with issues related to reading self-efficacy and motivation among adult learners in a literacy class may lead to increased reading comprehension achievement.

Instruction/Methods and Material—Instructional Materials

Trend 24: Integrating adult-oriented, contextually relevant material into literacy programs may lead to increased reading achievement.

Instruction/Methods and Material—Intensity and Duration

Trend 25: Spending at least 70% of classroom time practicing reading and writing, including the occasional but direct or deliberate discussion of reading strategies, may increase learners' meta-comprehension abilities.

Trend 26: Reading comprehension achievement may increase as a learner stays longer in a literacy program, although progress may be extremely variable over time.

Instruction/Methods and Material—Teacher Preparation

Trend 27: Staff with more experience or training may have a better chance at improving reading comprehension achievement.

Learner Characteristics – Motivation

Trend 28: The direct or deliberate discussion of learners' literacy beliefs and plans in order to deal with issues of reading self-efficacy and motivation may increase reading comprehension achievement.

Ideas for Comprehension Instruction From K-12 Research

Methods and Material—Teaching Strategies

Idea 18: To improve ABE learners' reading comprehension, use a balanced or multiple-components approach to instruction in which all aspects of the reading process are addressed, as needed, including phonemic awareness, word analysis, and vocabulary as well as reading comprehension.

Idea 19: To improve ABE learners' comprehension of specific texts (those ABE learners reading above Grade Equivalent 3), teach them strategies that can be used during the reading process and that enable them to become actively engaged in understanding a text. Eight effective strategies have been identified: comprehension monitoring, cooperative learning, graphic organizers, story structure, question answering, question generation, summarization, and multiple strategies (combining the above when appropriate).

Idea 20: To improve ABE learners' general reading comprehension achievement (those ABE learners reading above Grade Equivalent 3), teach them a repertoire of several strategies that they can use consciously and flexibly as needed while reading and that enable them to become actively engaged in understanding a text. Combinations of the following strategies are suggested by the research: comprehension monitoring, cooperative learning, graphic organizers, story structure, question answering, question generation, and summarization.

Methods and Material—Teacher Preparation

Comment 7: To improve ABE learners' general reading comprehension achievement, train their teachers to teach the awareness and use of multiple strategies for reading and understanding a text.

Comment 8: To improve ABE teacher's knowledge of reading comprehension instruction, use both preservice and inservice training, and to improve their students' reading comprehension achievement directly, use inservice training.

Learner Characteristics - Functional Reading Level

Idea 21: For intermediate adult readers (Grade Equivalents 3-6), improve comprehension of narrative texts by teaching story structure, or the typical content and organization of stories.

Idea 22 To improve the general reading comprehension achievement of adult intermediate and advanced readers, teach the flexible use of multiple reading comprehension strategies.

Computer Technology

Instruction/Overall

Principle 17: In general, computer-assisted instruction (CAI) is at least as effective as non-CAI in increasing reading comprehension achievement.

Instructional Focus

Principle 18: The use of CAI may lead to increased reading comprehension achievement.

Trend 29: The use of CAI may lead to increased word recognition achievement.

Instructional Goals

Trend 30: CAI may be effective for reading instruction in general functional literacy settings.

Trend 31: CAI may be effective for reading instruction in family literacy settings.

Methods and Material—Functional Reading Level

Trend 32: CAI may be most effective for adults reading at the pre-secondary level.

Ideas From K-12 Research/ Overall

Comment 9: It is possible to use computer technology effectively for reading instruction.

Comment 10: Speech synthesis may be an effective component of computer-assisted instruction.

Reading Assessment Profiles

Definition

Reading assessment is used to gather data to understand students' strengths and weaknesses in reading (Harris & Hodges, 1995, p. 12). This data is used to help design effective programs of instruction and to document the outcomes of instruction. The Tests of Adult Basic Education (TABE) and the Adult Basic Learning Examination (ABLE) are examples of two widely used, standardized tests in adult basic education that can provide teachers with information about at least two aspects of their students' reading: reading comprehension and vocabulary (CTB/McGraw-Hill, 1987, 1994; Karlsen & Gardner, 1986). Teacher observations and Informal Reading Inventories are examples of less formal measures. Teachers, test-makers, and researchers have all developed ways to assess students' reading ability in each individual aspect of reading: alphabetics, fluency, vocabulary, and comprehension. The characteristics of these methods are described separately in the major sections of this report.

Assessment profiles combine information from tests of several components to create profiles of learners' strengths and needs in reading for instructional purposes (Chall, 1994; Chall & Curtis, 1990; Roswell & Chall, 1994; Strucker, 1997). Learner profiling involves assessing a student in each major component of reading and using a common measure, such as grade equivalents, to create an outline of strengths and needs. When this technique is used, it is typically one of the first tasks a teacher completes and so it has been placed at the beginning of this report.

Rationale

Adult educators have traditionally used reading assessment to measure student growth in reading achievement and to diagnose individual strengths and weaknesses in reading in order to plan for instruction (Askov, Van Horn, & Carman, 1997). Determining what an individual learner or classroom of learners already knows and what they need to learn is thought to make instruction more efficient and effective. Measuring growth helps to determine whether a program of instruction has been effective (Askov et al., 1997; Joint Committee on Standards for Educational and Psychological Testing of the American Educational Research Association, American Psychological Association, and National Council on Measurement in Education, 1999).

Assessment profiles result in a comprehensive view of learner strengths and needs across all aspects of the reading process and can be used to design a program of instruction that addresses all aspects of the reading process during instruction. This ensures a balanced approach to instruction in which no one aspect of the reading process is over- or under-emphasized (NRP, 2000b; Snow, Burns, & Griffin, 1998; Snow and Strucker, 2000). In addition, researchers can use multiple measures of components to increase confidence that each assessment instrument is actually measuring the construct or aspect of reading that it is supposed to measure.

Reading Assessment: Principles and Trends

Question

Does assessment of adult learners' strengths and needs in reading instruction lead to increased reading achievement?

No trends are drawn from the research because there is very little experimental or non-experimental research that evaluates the effects of assessment on reading achievement, even at the K-12 level (Dochy, 2000 Segars & Buehl, 1999). It is widely assumed, however, that assessment of learner strengths and needs is an important aspect of instruction. In order to effectively and efficiently teach reading, a teacher must accurately assess an adult learner's ability in one or more areas of reading instruction (alphabetics, fluency, vocabulary, and comprehension). Reading assessment may be used to diagnose specific strengths and needs in reading for individual adults or for adults being taught in groups. It is also used to evaluate and modify instruction, and to evaluate overall ABE program effects on reading achievement.

Assessment Profiles

Question

Do assessments that include more than one aspect of the reading process, such as profiles, provide useful additional information for reading instruction? Based upon assessment profiles, what are ABE learners' strengths and needs in reading?

Several studies that describe the strengths and needs of ABE adult readers use more than one measure of reading ability (e.g., Greenberg, Ehri, & Perin, 1997; Scarborough, 1984; Pennington, Orden, Smith, & Green, 1990). Separate measures may be used for each important aspect of instruction: alphabetics, fluency, vocabulary, and comprehension. In some cases, more than one measure is used for the same aspect of instruction. Three measures for reading comprehension are used on the NALS, for example, each related to different content: prose, document, and quantitative (Kirsch, Jungeblut, Jenkins, & Kolstad, 1993). The studies described in this section focus on the profiles or patterns found across test scores in each area of instruction.

Principle 1: When measures of achievement are obtained for each crucial aspect of reading instruction (alphabetics, fluency, vocabulary, and comprehension), instructionally relevant patterns of scores, or profiles of adults' strengths and needs in reading, may be observed. These profiles suggest that ABE readers, including those in ESOL programs and those with a reading disability, are very diverse and that any one measure of reading achievement may not be sufficient to identify strengths and needs for instruction. (Carver & Clark, 1998; Chall, 1994; Norman & Malicky, 1987; Norman, Malicky, & Fagan, 1988; Strucker, 1995, 1997).

In one non-experimental, descriptive study, a group of approximately 100 ABE learners were administered tests of word analysis and word recognition (alphabetics), oral reading (fluency), spelling, vocabulary, and comprehension (Chall, 1994). The learner profiles, or patterns of grade equivalent scores across the six measures, were analyzed. Two common patterns were found. One pattern describes ESOL adults, and the other seems to be similar to the patterns of scores found among children with a reading disability. For the ESL group, alphabetics and fluency scores are relatively high while vocabulary and comprehension scores are relatively low. For the reading disabled group, a different common profile was found. Print-based aspects of reading (alphabetics and fluency) tend to be relatively low while meaning-based aspects of reading (vocabulary and sometimes comprehension) tend to be relatively high. These two profiles were observed across ability levels, from beginning to advanced levels of reading.

Two studies of ABE learners' reading achievement profiles used factor or cluster analyses to look for common patterns across learners. In one (Norman et al., 1988, with a non-statistical presentation in Norman & Malicky, 1987), the following scores were used to generate profiles for over 100 adults reading at Grade Equivalent 1 through 8 (GE 1-8): reading comprehension and word recognition achievement scores on an informal reading inventory, the number of oral reading miscues in five miscue categories, and the number of ideas (clauses) recalled in four separate categories. Miscue and clause categories were based on the degree to which miscues and clauses were either text-based or knowledge-based. An oral reading miscue that resembles a word in the original text (saying "bark" when the word in the text is "dark," for example) is text-based, while a miscue that does not is presumed to come from the reader's knowledge base. Similarly, a recalled idea that closely resembles one in the text is text-based, while one that does not is knowledge-based. Results from the analysis suggest that profiles cluster into two or three groups, based on developmental stages in reading ability. Beginning readers (GE 1-4) attend more to the print on a page than they do to their own knowledge as they read. More advanced readers (GE 5-7) rely on both print and knowledge and are better able to integrate the two. An intermediate or transition group at about GE 4 may also be present.

Another cluster analysis study is described (in Strucker, 1997) along with two case studies of adult learners' reading profiles (quantitative details of the cluster analysis are reported in a non-peer-reviewed manuscript, Strucker, 1995). Data from seven measures of reading for over 100 ABE learners were used in the cluster analysis. These included measures of alphabetics (phonemic awareness, word analysis, and word recognition), spelling, fluency (oral reading), oral vocabulary, and reading comprehension. In general, two categories of profiles were identified, ESL and reading disabled, supporting observations made in one of the descriptive studies cited above (Chall, 1994). In addition, nine patterns of strengths and weaknesses in reading that may be instructionally relevant were found across several developmental levels or stages. There were two profiles for beginning readers (GE 0-3): beginners and advanced beginners. There were four profiles at the intermediate level (GE 4-8): ESL and non-ESL inner city young adults, ESL and non-ESL reading disabled, reading disabled (low comprehension), and ESL and inner-city young adults. The three remaining profiles were at the advanced ABE level (GE 9-12): reading disabled (high comprehension), pre-GED low vocabulary, and GED high vocabulary.

A series of three studies allows a comparison of the reading profiles of ABE students with those of children and advanced adult readers and supports the use of profiles to describe adults' strengths and needs in reading (Carver & Clark, 1998). Children finishing the 3rd, 4th, and 5th grade, a group of normally achieving university freshman, and a group of 128 average to poor readers from a community college were all assessed with the same computer-assisted assessment system that measures oral and silent vocabulary, reading comprehension, oral reading rate, word recognition, and the speed at which readers can name letters. Reading profiles derived from these scores suggest that the average scores of children and university freshman form flat profiles, with roughly the same GE scores for all components, while poorer adult readers have noticeable strengths and weaknesses (ups and downs) in their profiles. Averages scores for the various components assessed were all in the GE 12 to GE 13 range for the university students and at GE 5 for the children. GE scores in the profiles of the poor readers from the community college were, on the other hand, variable, with rate (fluency) and word recognition (word analysis) scores usually being the lowest scores. A more qualitative description of the subset of the community college group with a reading disability, defined as having at least one GE score of 6 or lower, suggests that most (98%) of these reading disabled adults had low rate scores, or a rate disability. All also had low word recognition scores, and 67% scored below GE 6 on a measure of oral vocabulary knowledge.

Alphabetics: Phonemic Awareness and Word Analysis

Definition

English is an alphabetic language. The letters in its alphabet are used to represent the sounds of spoken English. One aspect of reading is the ability to associate a written word or string of letters with the spoken word that it represents and, consequently, with the concepts or meanings associated with this word. The whole process of using the letters in a written alphabet to represent meaningful, spoken words is called alphabetics.

Alphabetics includes both phonemic awareness, or knowledge of the sounds of spoken language, and word analysis, or knowledge of the connection between written letters and sounds (letter-sound correspondence).

Phonemic Awareness

> Phonemic awareness refers to the ability to focus on and manipulate phonemes in spoken words. . . . Phonemes are the smallest units constituting spoken language. English consists of about 41 phonemes. Phonemes combine to form syllables and words. A few words have only one phoneme, such as ***a*** or ***oh***. Most words consist of a blend of phonemes, such as ***go*** with two, or ***check*** with three phonemes, or ***stop*** with four phonemes (NRP, p. 2-1).

Graphemes are the written letters used to represent phonemes. A grapheme may be a single letter representing a single sound. ***Go*** consists of two graphemes, ***g*** and ***o***. A grapheme may also consist of more than one letter. The word ***check*** consists of three graphemes, the two-letter combinations ***ch*** and ***ck*** and the single-letter grapheme ***e***.

Although each grapheme represents a phoneme, different graphemes may be used to represent the same phoneme. The sound corresponding to the grapheme ***oh*** may also be represented by the graphemes ***oe***, ***ough***, and ***ow***, for example. Also, the same grapheme may represent different phonemes, depending on context. The grapheme ***a*** in ***glad*** represents a different sound than the ***a*** in ***glade***.

Word Analysis

Word analysis instruction is commonly thought of as phonics instruction, especially with children. Beginning phonics focuses on simple one-letter graphemes representing consonants (***b, c, d, f, g, h***, and so on) and vowels (***a, e, i, o, u***) and blending them together to make simple words (***sat***, ***met***, and so on). While phonics instruction, viewed narrowly, is restricted to teaching grapheme-phoneme (letter-sound) correspondences, word analysis instruction may also include other methods that students can use to figure out words. One of these,

sight word recognition, is taught along with phonics. Common and irregularly spelled words (**was**, **want**, **to**) are taught to be recognized on sight as whole words rather than being analyzed into graphemes and phonemes and then blended. Other word analysis techniques that are taught are the use of context, knowledge of prefixes, suffixes, and their stems, and dictionary skills.

The distinction between phonemic awareness (PA) and phonics instruction is not always a sharp one, as noted by the NRP:

> Some forms of PA training in the [NRP] data set qualified as phonics instruction, which involves teaching students how to use grapheme-phoneme correspondences to decode or spell words. For example, [one] program taught students to use graphemes and phonemes to blend words—which is decoding. [Another program] taught students to use graphemes and phonemes to segment words—which is spelling. Also, another taught both segmenting and blending with letters. What distinguished the NRP [PA] studies from the general pool of phonics training studies, however, is that instruction . . . was limited to grapheme-phoneme manipulation and did not go beyond this to include other activities such as reading decodable text or writing stories (p. 2-11).

Thus, the NRP treated some approaches that used letters as well as sounds during instruction, and that technically are forms of phonics instruction, as PA instruction. Although these approaches included the manipulation of letters as well as sounds, they did not involve instruction above the word level.

Phonics may be taught systematically or incidentally. Systematic phonics instruction is the direct, explicit teaching of a comprehensive set of grapheme-phoneme correspondences including consonants, short and long vowels, two-letter graphemes (oi, ea, ou, sh, ch), and common blends consisting of more than one grapheme (st, sm, bl, pr) (p. 2-99). Students practice using this letter-sound knowledge when reading word lists and texts that are, to various degrees, controlled so that they contain words that are decodable using letter-sounds relations learned. Programs that do not emphasize phonics in this way, that teach it incidentally, include "whole word programs, whole language programs, and some basal reader programs" (p. 2-89).

The NRP (p. 2-81) describes several types of systematic phonics programs:

> ***Synthetic phonics*** programs teach children to convert letters into sounds or phonemes and then blend the sounds to form recognizable words.
>
> ***Analytic phonics*** avoids having children pronounce sounds in isolation to figure out words. Rather children are taught to analyze letter-sound relations once the word is identified.
>
> ***Phonics-through-spelling*** programs teach children to transform sounds into letters to write words.
>
> ***Phonics in context*** approaches teach children to use sound-letter correspondences along with context cues to identify unfamiliar words they encounter in text.
>
> ***Analogy phonics*** programs teach children to use parts of written words they already know to identify new words.
>
> ***Mixed programs:*** The distinctions between systematic phonics approaches are not absolute, however, and some phonics programs combine two or more of these types of instruction.

A synthetic phonics program would teach the three graphemes ***t***, ***a***, ***p*** and their associated phonemes (often pronounced as ***tuh***, ***a***, and ***puh***) before teaching students to blend them (***tuh-a-puh*** or ***tap***). Through practice and direct instruction, some synthetic phonics programs teach letter-sound units that are larger than single grapheme-phoneme pairs. Common blends such as ***str*** (three phonemes that are ***blended*** together) and ***eam*** (two phonemes) are taught as one unit or become automatized through practice and become essentially one unit for the student. In this way, when decoding the word ***stream***, for example, students are not faced with blending ***s-tuh-er-ea-m***, which might tax short term memory and requires getting rid of some extra sounds during the blending process, like the ***uh*** in ***tuh*** (p. 2-104).

Rationale

Why should PA and word analysis be taught?

> PA is thought to contribute in helping children learn to read because the structure of the English writing system is alphabetic. Moreover, it is not easy to figure out the system. Words have prescribed spellings that consist of graphemes symbolizing phonemes in predictable ways. Being able to distinguish the separate phonemes in pronunciations of words so that they can be linked to graphemes is difficult. This is because spoken language is seamless and there are no breaks in speech signaling where one phoneme ends and the next one begins. Rather phonemes are folded into each other and are coarticulated. Discovering phonemic units is helped greatly by explicit instruction in how the system works (p. 2-11).

PA is not learned naturally along with speech; it is learned through reading and writing and is an important aspect of the word reading process. Both PA and phonics instruction may contribute to decoding words ("transforming graphemes into phonemes and then blending the phonemes to form words"), recognizing the similarity between known and unknown words and reading by analogy, recalling learned words or sight words from memory, and providing cues to help make guessing words from context more accurate (p. 2-11). As readers advance, more complex aspects of word analysis may contribute to word reading ability, such as the knowledge of words parts (parts of words such as prefixes, suffixes, stems, and the parts of compound words) and the use of tools such as the dictionary.

Both PA and word analysis contribute to word reading and word reading is necessary in reaching the ultimate goal for reading, text comprehension. Once word reading is learned, comprehension of the meaning of a text is possible. Comprehension processes used while reading are at least very similar to those used to understand spoken language (p. 2-106).

Assessment

Phonemic awareness (PA) and phonics or word analysis are assessed by asking learners to complete tasks at the word and sub-word levels. The NRP (2000b, p. 2-10) provides a good list of tasks used to assess PA or to improve PA through instruction and practice. In the following list of assessment tasks quoted from the NRP, letters between slashes are meant to be read as sounds, not letters. For example, ***/b/*** is read as the first sound in "buh" as opposed to ***b*** without the slashes, which would normally be read as "bee."

Assessment tasks from the NRP (p. 2-10):

1. Phoneme isolation, which requires recognizing individual sounds in words, for example, "Tell me the first sound in paste." ***(/p/)***
2. Phoneme identity, which requires recognizing the common sound in different words. For example, "Tell me the sound that is the same in bike, boy, and bell." ***(/b/)***
3. Phoneme categorization, which requires recognizing the word with the odd sound in a sequence of three or four words, for example, "Which word does not belong? bus, bun, rug" ***(rug)***
4. Phoneme blending, which requires listening to a sequence of separately spoken sounds and combining them to form a recognizable word. For example, "What word is /s/ /k/ /u/ /l/?" ***(school)***
5. Phoneme segmentation, which requires breaking a word into its sounds by tapping out or counting the sounds or by pronouncing and positioning a marker for each sound. For example," How many phonemes are there in ship?" (three: ***/sh/ /i/ /p/***)
6. Phoneme deletion, which requires recognizing what word remains when a specified phoneme is removed. For example," What is smile without the /s/?" ***(mile)*** (p. 2-10).

Phonics assessment includes tasks involving whole words and parts of words. Knowledge of word parts can be assessed by asking students to pronounce single-letter graphemes ***(What sounds do these letters make: b, d, f? What is the short vowel sound made by these letters: a, e, i?)***, digraphs ***(What sounds do these letters make: ch, ck, oa, ee?)***, and larger word parts, including blends of more than one grapheme ***(br, st, str, at, am).***

The ability to pronounce these word parts can also be assessed with whole word tasks. To find out if someone can decode the short ***a*** vowel sound, for example, we might ask him or her to read the word ***can***. Any response with a short ***a*** sound in the middle position would be correct (***can***, ***cat***, or ***ban***) because it contains the short ***a*** target phoneme.

Whole words, of course, are used most often to assess how well learners can decode complete words. In this case, we would expect all of the sounds to be pronounced correctly and blended together into the word ***can***. Problems can arise when using real words, such as ***can***, to assess decoding. If the learner knows ***can*** as a sight word, no decoding skills are needed to pronounce it. For this reason, decoding assessments often use nonsense words, or words that a learner could not have already memorized as a whole word. The nonsense word ***cag***, for example, would not have been memorized as a sight word.

Sight word knowledge is assessed with sets of words typically encountered at different reading levels. These sets contain both regular and irregular words (NRP, p. 2-90).

Alphabetics Assessment: Principles and Trends

Question

Based upon assessment results, what are ABE learners' strengths and needs in alphabetics?

Research assessing adult's phonemic awareness (PA) and word analysis (WA) skills has focused on adult non-readers, adult beginning readers, and adults with a reading disability. No experimental research was found that dealt with the PA and WA abilities of ABE adults in ESOL programs.

Principle 2: Adult non-readers have virtually no phonemic awareness ability and are unable to consistently perform, on their own, almost all phonemic awareness tasks. (Adrian, Alegrai, & Morais, 1995; Bertelson, Gelder, Tfouni & Morais, 1989; Morais, Bertelson, Cary, & Alegria, 1986; Morais, Cary, Alegria, & Bertelson, 1979; Read, Zhang, Nie, & Ding, 1986; Scliar-Cabral, Morais, Nepomuceno, & Kolinsky, 1997)

Experimental results from five studies and non-experimental results from one study of non-readers demonstrate that they lack basic phonemic awareness, or the knowledge that words are made up of individual sounds (Adrian, Alegrai, & Morais, 1995; Bertelson, Gelder, Tfouni & Morais, 1989; Morais, Bertelson, Cary, & Alegria, 1986; Morais, Cary, Alegria, & Bertelson, 1979; Read, Zhang, Nie, & Ding, 1986; Scliar-Cabral, Morais, Nepomuceno, & Kolinsky, 1997). All of these studies evaluated non-readers from countries other than the United States, presumably because it is difficult to find completely illiterate groups of adults in the U.S. Each study used at least one group of illiterate adults that had been exposed to a language that, like English, uses an alphabetic writing system. Although illiterate adults may possess some rudimentary, practical knowledge of phonemes, each study found that they are unable to consistently perform almost all phonemic awareness tasks. This was true even for adults who were literate in a non-alphabetic language (Chinese) but illiterate in the alphabetic version of this language (Read et al., 1986). Non-readers could not, for example, consistently delete a consonant from a word or nonword they heard in order to produce a new word or nonsense syllable (e.g., deleting the ***b*** sound in the word ***bat*** to produce the word ***at***, or deleting the ***d*** sound in the nonword ***dak*** to produce the nonsense syllable ***ak***).

Principle 3: Adult beginning readers, like all beginning readers including children, perform poorly on phonemic awareness tasks that require phoneme manipulation. The ability to perform more complex operations with phonemes generally increases (in adults without a reading disability) along with reading ability, until word analysis is established. (Adrian, Alegrai, & Morais, 1995; Byrne & Ledez, 1983; Greenberg, Ehri, & Perin, 1997; Morais, Bertelson, Cary, & Alegria, 1986; Pratt, & Brady, 1988; Read & Ruyter, 1985; Scliar-Cabral, Morais, Nepomuceno, & Kolinsky, 1997)

Experimental results from several studies and non-experimental results from one study show that beginning adult readers, like non-readers, perform poorly on phonemic awareness tasks (Adrian, Alegrai, & Morais, 1995;

Byrne & Ledez, 1983; Greenberg, Ehri, & Perin, 1997; Morais, Bertelson, Cary, & Alegria, 1986; Pratt, & Brady, 1988; Read & Ruyter, 1985; Scliar-Cabral, Morais, Nepomuceno, & Kolinsky, 1997). All but two of these studies (Adrian et al.; Scliar-Cabral et al.) involved adults who spoke English. Several studies found that the ability to manipulate speech sounds seems to improve as an adult's reading ability improves (Adrian et al., 1995; Morais et al., 1986; Pratt & Brady, 1988; Scliar-Cabral, et al., 1997). One study found a gradual increase in the number and complexity of phonemic awareness tasks across groups of non-readers, beginning readers (those with up to two years of schooling), and literate adults (those with 4 - 11 years of schooling) (Scliar-Cabral, et al., 1997). A similar study found an increase in phonemic awareness between those who were just beginning to learn to read but who could not yet consistently decode single-syllable words and those who were beginning to read monosyllabic words with some consistency (Adrian et al., 1995). Another found that advanced ABE readers (approaching the time when they would take the GED) were significantly better at phonemic awareness tasks than beginning ABE readers (Pratt & Brady, 1988). This suggests that phonemic awareness may continue to develop at least until decoding ability is firmly established. It is important to note that none of these studies looked specifically at adults with a severe reading disability such as dyslexia.

Principle 4: Adult beginning readers, like other beginning readers, have difficulty applying letter-sound knowledge in order to figure out new or unfamiliar words while reading, although they are generally better at recognizing familiar sight words than children who are learning to read. (Byrne & Ledez, 1983; Gottesman, Bennett, Nathan, Kelly, 1996; Greenberg, Ehri, & Perin, 1997; Read & Ruyter, 1985)

Lacking the ability to manipulate speech sounds in words orally, adult beginning readers may also have difficulty manipulating the written letters and letter-combinations that represent speech sounds (Read & Ruyter, 1985; Gottesman et al., 1996; Greenberg, Ehri, & Perin, 1997; Byrne & Ledez, 1983). Adults learning to read may tend not to use letter-sound knowledge to figure out unknown words as they read (Byrne & Ledez, 1983); they may be relatively better at sight word recognition or recognizing whole words (Read & Ruyter, 1985). One experimental result comparing children and adults at the same reading level finds that adults are better at recognizing familiar words but are worse than the children in using letter-sound knowledge (Greenberg, Ehri, & Perin, 1997).

Trend 1: On phonemic awareness tasks, adult beginning readers are not as good as reading-matched children (children progressing normally in their reading who are reading at the same level as the adults). Adult beginning readers' PA abilities may be more like those of children who are poor readers. (Greenberg, Ehri, & Perin, 1997)

In many of the studies discussed above, similarities between the level of phonemic awareness of adult beginning readers and of children beginning to learn to read were noted (Byrne & Ledez, 1983; Pratt, & Brady, 1988; Read & Ruyter, 1985). Experimental results from one study, in which adult readers were compared directly to children reading at the same level (based on a test of word recognition), found that adult beginning readers are much worse on phoneme deletion and segmentation than these reading-matched children (Greenberg, Ehri, & Perin, 1997).

Trend 2 The basic PA abilities of adults who learn to read at an older age are not different from adults who learn to read at a younger age. (Morais, Cary, Alegria, & Bertelson, 1979)

In one experimental study, adults who learned to read after the age of 25 were compared with those who learned to read before age 25. There were no differences in PA ability between the two groups. Age does not seem to affect the ability to learn PA.

Alphabetics Assessment of Adults with a Learning Disability

Question

Based upon assessment results, what are the strengths and needs in alphabetics for ABE learners' with a learning disability?

Trend 3 While readers will typically develop phonemic awareness as they learn to read, adults with a learning disability in reading, such as dyslexia, may not; dyslexia tends to persist into adulthood and may be related to a functional disruption in the brain. (Bruck, 1992; Pennington, Orden, Smith, Green, & Haith, 1990; Scarborough, 1984; Shaywitz, Shaywitz, Pugh, Fulbright, Constable, Mencl, Shankweiler, Liberman, Skudlarski, Fletcher, Katz, Marchione, Lacadie, Gatenby, & Gore, 1998)

Most of the studies that support this trend are robust, experimental studies. This trend is not labeled a principle, however, because the studies do not specifically evaluate students who qualify for ABE programs. The studies do not distinguish between those adults with a reading disability (dyslexics) who have completed high school and those who have not, for example. The studies are included in the research review because there is no reason to believe that ABE adults with dyslexia would perform any better on phonemic awareness tasks than the dyslexic adults in these studies.

In a series of four experiments, phonemic awareness among adults diagnosed with dyslexia was found to be extremely low (Pennington, Orden, Smith, Green & Haith, 1990). In these studies, phonemic awareness was also found to be strongly related to word analysis ability among adult dyslexics, as measured by a non-word reading task. In an experimental, brain-imaging study of adults with dyslexia, they scored significantly lower than non-dyslexic adults on tasks that placed progressively greater demands on phonological processing ability, and their pattern of brain activity during these tasks indicated a disruption in the brain systems responsible for translating letters into sounds (Shaywitz, Shaywitz, Pugh, Fulbright, Constable, Mencl, Shankweiler, Liberman, Skudlarski, Fletcher, Katz, Marchione, Lacadie, Gatenby, & Gore, 1998).

In two additional studies (one with experimental and one with descriptive results), adults diagnosed with dyslexia during childhood, or who remembered significant reading difficulties during childhood, were found to

continue to have poor phonemic awareness into adulthood (Bruck, 1992; Scarborough, 1984). For non-disabled good readers in one study, increased phonemic awareness was associated with increases in age and grade level, but was not for those with dyslexia (Bruck, 1992). The low level of phonemic awareness attained by those with dyslexia (knowledge of onset-rime only) is similar to the rudimentary phonemic awareness that another study reports for those who were illiterate (Scliar-Cabral, Morais, Nepomuceno, & Kolinsky, 1997).

Alphabetics Assessment of ESOL Adults

Question

Based upon assessment results, what are the strengths and needs in alphabetics for ABE learners' in ESOL classes?

There has been very little alphabetics research done with those who learn English as a second language, at either the K-12 or adult levels. As with most ESOL reading research, the few studies that look at the alphabetics ability of ESOL adults either: (a) do not distinguish between ABE and non-ABE students; (b) do not specify student reading levels in enough detail; and/or (c) are done at universities with second language learners who have more than 12 years of schooling in their native language (e.g., Koda, 1999).

Alphabetics Instruction: Principles and Trends

Overall

Questions

Does participation in adult basic education increase ABE students' phonemic awareness (the ability to manipulate the basic sounds in spoken words) or word analysis skills (the ability to recognize and use letter-sound correspondences in reading)? Does instruction in phonemic awareness or word analysis lead to increases in reading achievement?

Principle 5: Participation in ABE programs may lead to increases in adult beginning readers' word analysis abilities. (Curtis & Chmelka, 1994; Gold & Horn, 1982, and Gold & Johnson, 1982; Maclay & Askov, 1988; Truch, 1994; Venezky, Bristow, & Sabatini, 1994)

Most evaluations of adult literacy programs have not assessed effects on phonemic awareness or word analysis. Experimental results from two studies that did assess effects on word analysis achievement suggest that

participation in ABE programs can improve adult beginning readers' word analysis achievement (one study is reported in Gold & Horn, 1982, and Gold & Johnson, 1982, and the other in Maclay & Askov, 1988). Although non-experimental results from one study (Venezky, Bristow, & Sabatini, 1994) found no evidence for growth in word analysis ability (decoding) following participation in ABE, results from two non-experimental studies did (Curtis & Chmelka, 1994; Truch, 1994).

It was clear from the descriptions of all but one of these studies (Venezky, Bristow, & Sabatini, 1994) that word analysis was an important part of the instruction provided to adult learners. Those studies that focus specifically on the effects of word analysis instruction are described in more detail in the Teaching Strategies topic below.

Trend 4 Participation in adult education may lead to increases in adult beginning readers' phonemic awareness. (Bertelson, Gelder, Tfouni & Morais, 1989; Gombert, 1994; Morais, Cary, Alegria, & Bertelson, 1979; Morais, Content, Bertelson, Cary, & Kolinsky, 1988; Truch, 1994)

Experimental results from one study (Morais et al., 1979) found that those who completed adult literacy programs had better PA ability than those who did not. The programs themselves, and methods used, were not described. Non-experimental results from three studies suggest that focused phonemic awareness instruction by itself (Bertelson et al., 1989; Gombert, 1994; Morais et al., 1988) or along with instruction in other aspects of reading (Truch, 1994), leads to increased phonemic awareness among adult non-readers (Bertelson et al.; Gombert; Morais et al.) and adult beginning readers (Gombert; Truch).

None of these three studies took place in a traditional ABE setting. In the study involving adult beginning readers, the tested group included children, though age was used as a covariate in the analysis. The studies involving non-reading adults was conducted with non-English speaking adults in their native language, which was an alphabetic language like English.

Principle 6: Phonemic awareness and/or word analysis instruction may lead to increased achievement in other aspects of reading for adult beginning readers. (Curtis & Chmelka, 1994; Gold & Horn, 1982, and Gold & Johnson, 1982; McKane & Greene, 1996; Truch, 1994)

ABE research has not isolated the effects of phonemic awareness or word analysis instruction on other aspects of reading achievement, such as comprehension ability. Two of the studies discussed above and one discussed in the fluency section below, however, suggest that alphabetics instruction combined with instruction in other aspects of reading may lead to increased achievement in other aspects of the reading process (Curtis & Chmelka, 1994; Gold & Horn, 1982, and Gold & Johnson, 1982; McKane & Greene, 1996). All found increases in reading comprehension ability when alphabetics was a significant part of instruction. One additional non-experimental study (Truch, 1994) finds that focusing on phonemic awareness instruction, but including some word analysis instruction, leads to increases in fluency (oral reading accuracy).

Goals and Setting

Questions

Does participation in a program specifically aligned with one of the three major ABE goals or settings lead to a greater increase in phonemic awareness or word analysis ability than participation in another type of program? Does setting affect the degree to which PA or word analysis instruction increases achievement in other aspects of reading?

No research was found that compares the effects of alphabetics instruction in programs aligned with one of the three major ABE goals or settings: general functional literacy, workplace literacy, and family literacy.

Question

Within any one type of program, is it possible to increase phonemic awareness or word analysis abilities, and is instruction related to alphabetics effective in increasing other aspects of reading?

All except one of the research studies presented above, in the Overall section, was done in a general functional literacy setting. The principles in that section, then, apply to general functional literacy. No trends were found for workplace literacy, although descriptive results from one study found that students' word analysis ability increased in a vocational-technical developmental reading class when a meaning-based, diagnostic-prescriptive approach to instruction was used (Cheek & Lindsey, 1994). Experimental results from this study are described in more detail in the teaching strategies section.

Family Literacy

Within a family literacy program, is it possible to increase phonemic awareness or word analysis abilities?

Trend 5 It may be possible to increase word analysis achievement in a family literacy setting. (Maclay & Askov, 1988)

Results from one experimental study suggest that adult beginning readers (reading below GE 4) in a family literacy program who receive extensive practice in the recognition of 1,000 high frequency and functional sight words increase their word recognition achievement. This study is described in more detail in the teaching strategies section.

Instructional Methods and Material

Of the several factors that may affect the outcomes from alphabetics instruction (teaching strategies, instructional materials, intensity and duration, and teacher preparation), no research was found related to teacher preparation. All other factors are discussed below.

Teaching Strategies

Question

What specific teaching strategies or techniques can be used to increase phonemic awareness and word analysis abilities?

Because there are only four, non-experimental results from studies relevant to the part of this question having to do with PA, no principles or trends related to PA teaching strategies can be drawn from the research. The four studies that do address phonemic awareness instruction suggest that it may be taught to adults using approaches that include direct instruction in phonemic awareness and instruction in phonemic awareness along with instruction in other aspects of reading. In three studies (Bertelson, Gelder, Tfouni & Morais, 1989; Gombert, 1994; Morais, Content, Bertelson, Cary, & Kolinsky, 1988), some simpler phonemic awareness tasks were quickly taught to adult non-readers and beginning readers using simple demonstration and corrective feedback. These adults were non-English speaking adults, but their native language was alphabetic, like English, and instruction took place in their native language.

In another non-experimental study, extensive, direct instruction in the manipulation of phonemes (using Auditory Discrimination in Depth) followed by practice in word analysis, spelling and fluency (oral reading), appeared to increase phonemic awareness among reading disabled adults (Truch, 1994). Phoneme awareness exercises involved segmenting words into phonemes, blending phonemes, and adding, deleting, substituting, and shifting phonemes. The group given pretests and posttests in this study included children. However, the group as a whole increased phonemic awareness ability, and age was used as a covariate in the analysis.

Principle 7: Word analysis may be taught using approaches that include direct instruction in word analysis along with instruction in other aspects of reading. (Curtis & Chmelka, 1994; Gold & Horn, 1982, and Gold & Johnson, 1982; Maclay & Askov, 1988; Truch, 1994)

In one study with experimental results (reported in Gold & Horn, 1982, and Gold & Johnson, 1982) word analysis was taught using whole-word phonics (phonics by analogy) and writing words while speaking the letters (VAKT or visual, auditory, kinesthetic, and tactile approach). This took place within a larger context involving listening comprehension instruction and the use of student generated texts (through a language experience approach). Results suggest that this approach increases word analysis ability (word recognition as measured on the WRAT and Woodcock, and word attack as measured on the Woodcock).

Results from a second experimental study (Maclay & Askov, 1988) suggest that adults receiving extensive practice in the recognition of 1,000 high frequency and functional sight words increase their word recognition achievement (as measured on the SORT, a series of graded word lists at different levels of difficulty). The approach used in this study with adult beginning readers (reading below GE 4) was computer-based. The computer program assessed students' ability to recognize specific words and, when needed, provided word recognition practice using pictures and verbal descriptions (through voice synthesis). Although the students were taught whole words, some of the words taught included groups with common phonograms (such as the letter-sound combination ***ake***, as in ***make***).

Two non-experimental studies support these results. In one, word analysis skills are taught after focusing on phonemic awareness (Truch, 1994). Instructional tasks include, for example, spelling and word identification using increasingly complex real and nonsense words. After both phonemic awareness and word analysis have been established, reading in connected text is introduced. Adult learners using this approach appeared to improve in their ability to recognize words with both regular and irregular spellings. In the second non-experimental study (Curtis & Chmelka, 1994), four 15 to 17-year-old students increased the rate at which they were learning word analysis skills. These students used a Laubach phonics and sight word recognition program modified to include practice on more challenging words. Less challenging words may not be as effective because they may be a part of adults' sight word knowledge and, if so, there would be no need to use individual letter-sound correspondences to figure them out (cf., Greenberg, et al., 1997).

Trend 6 With adult readers at the intermediate level (reading around GE 6), a meaning-based diagnostic-prescriptive approach to teaching may not lead to increased word analysis achievement. (Cheek & Lindsey, 1994)

In an experimental study of two contrasting teaching styles, neither style was found to be more effective for teaching word analysis. There were no significant differences in the gains made by students taught with either of these styles on the Phonemic Analysis and the Structural Analysis subtests of the Stanford Diagnostic Reading Test. One style used a meaning-based, diagnostic-prescriptive approach while another used a programmed learning approach. The diagnostic-prescriptive approach had several important characteristics: formal and informal assessment to identify learner strengths, needs, and interests in reading; use of assessment results to develop individualized teaching strategies, methods, and materials for word analysis and reading comprehension instruction; and, language-experience and literature-based instruction emphasizing regular student-teacher interaction, real-life reading material, and reading as a meaning-making activity. The programmed learning approach, on the other hand, emphasized placement of students at their current reading levels in computer-based or print-based programs where they could work independently, at their own pace, and in a step-by-step manner toward a specific word analysis or reading comprehension learning objective.

The seventy-one students who participated in this study were each randomly assigned to one of the two approaches. Random assignment, the fact that the groups' initial reading levels were not significantly different,

and the fact that both classes were team-taught by the same pair of teachers, rule out many extraneous factors that could have accounted for the results. Therefore, several fairly specific questions for future research studies can be asked: Do students reading at around GE 6 need or benefit from word analysis instruction (the range in reading GE was 3.5 to 8.5)? Although the researchers attempted to vary only their teaching style or approach, how different were the specific word analysis teaching strategies in each group (especially given that one emphasized "meaning-centered instruction")?

Instructional Material

Question

Does the use of specific instructional material lead to increased phonemic awareness or word analysis achievement?

No trends or principles are drawn from the research, which included one non-experimental study (Curtis & Chmelka, 1994). This study isolated the effects of specific instructional material on 15 to 17-year-olds' rate of growth in word analysis achievement. The rate of growth for these four students increased when a modified (as opposed to unmodified) Laubach phonics and sight word program was used. The unmodified version used words for word analysis instruction that students may have known by sight (without having to sound them out). The modified version used more complex or challenging words, which seemed to force students to apply word analysis strategies (such as sounding out) as opposed to relying on their sight word knowledge.

Intensity and Duration of Instruction

Question

Does more intense literacy instruction, or instruction that is of longer duration, increase phonemic awareness or word analysis abilities?

No trends or principles were drawn from the research. Experimental results from one study, in which one group of students (those attending day classes) received three times the amount of instruction as those in another group (attending evening classes), suggest that word analysis achievement (decoding) does not increase as the total number of hours of instruction increases (Venezky, Bristow, & Sabatini, 1994). There were, however, no gains overall in word analysis, so differential gains based on hours of instructional time might not be expected.

Learner Characteristics

Question

Reading Level, Language Ability, Motivation, and Age

Are certain forms of phonemic awareness or word analysis instruction more effective for students at specific reading levels, levels of language ability, motivational levels, or age levels?

No trends or principles were drawn from the research. Almost all of the studies with results related to alphabetics were conducted with adult non-readers or beginning readers and none compared the effects of alphabetics instruction across reading levels. Also, none investigated the effects of language differences or motivational levels. One descriptive study, however, did find that adults learning to read in a second language, after learning to speak the language, were easily able to learn a phonemic awareness task, initial consonant deletion (Gombert, 1994).

Only one study, an experimental study of Portugese adults who had completed various literacy programs, evaluated the effects of age (Morais, Cary, Alegria, & Bertelson, 1979). Adults who learned to read after the age of 25 were compared with those who learned to read before age 25. There were no differences in the PA abilities of the two groups. Age does not seem to affect the ability to learn PA.

Ideas for Alphabetics Instruction from K-12 Research

Research findings related to alphabetics instruction at the K-12 level are much stronger than the ABE alphabetics research findings. The National Reading Panel (NRP) review finds that certain techniques for PA and phonics instruction are very effective across a variety of settings, grade levels, and types of learners (NRP, 2000b, pp. 2-4 – 2-5).

How are the findings from the K-12 research base related to alphabetics instruction for ABE learners? First of all, the results from the NRP research review do not address several topics important to adult basic education. The subtopics associated with Goals and Setting are not addressed and neither are the subtopics Teacher Preparation, ESOL, and Motivation. All of these are important factors in ABE instruction that may affect the outcome of instructional interventions. Adults may attend classes in workplace or family literacy settings or in community learning centers as well as in more formal educational settings, such as community college programs. In most of these settings, adults do not receive daily instruction in reading, as children do in the elementary education system. Adult attendance is not as good as children's either, given the exigencies of adult life. The demands of adult life may also make motivation a more important factor for adults. Alphabetics instruction for those learning English is an extremely important topic for those programs with ESOL classrooms.

Second, the main findings from the NRP review of alphabetics research studies with children in grades K-6 are basically compatible with the principles and trends derived from ABE research studies. None of these principles and trends is contradicted by the NRP findings although the ABE research may focus a bit more on whole word approaches to word analysis instruction.

Third, although the NRP findings provide some support for the evidence derived from studies of ABE adults, the ABE assessment research suggests that there are important differences between adults and children who are beginning to learn to read. These differences should be kept in mind when considering how alphabetics instruction with children may be related to alphabetics instruction with adults. The ABE research suggests that adult beginning readers are not as good at manipulating phonemes or at applying letter-sound correspondences (decoding) while reading. They are more like children reading below grade level (i.e., poor readers). On the other hand, adult beginning readers are better at word recognition than children at comparable levels of development in reading. In this case they are more like children reading above grade level (i.e., good readers).

The population of adults studied in ABE research studies is different in other important ways from the population of children studied in K-12 research studies. In addition to obvious differences in age and experience, adults attending ABE programs tend to be from lower socioeconomic groups. To the degree that reading ability and SES contribute to the results at the K-12 level, these differences make direct adult-child comparisons difficult. On the other hand, alphabetics research results at the K-12 level related specifically to those with poor PA and decoding abilities, and those from lower SES groups, may be of particular interest to adult educators.

Keeping in mind the above discussion, each topic important for ABE alphabetics instruction addressed by the NRP review will be discussed below, focusing on ***ideas*** for alphabetics instruction that can be derived from K-12 reading instruction research and that may be of use for ABE reading instruction.

Goals and Setting

Idea 1: Most students in ABE literacy programs are from lower socioeconomic levels, and PA training and systematic phonics instruction may be effective with adults from these settings.

K-6 research. The NRP review of phonemic awareness and phonics instruction in Kindergarten through the 6th grade does not consider ABE settings specifically. It does, however, evaluate the effects of PA and phonics instruction across socioeconomic levels. Results show that systematic phonics instruction is a better method for teaching decoding than non-systematic or incidental phonics instruction for children from families at low, middle, and high SES levels (p. 2-95). In addition, PA training was just as effective for children at all three SES levels (though transfer to other aspects of reading was greater for mid- to high-level SES children) (NPR, 2000b, pp. 2-4 – 2-5).

Instructional Methods and Material

The NRP report supports the emerging principles and trends from the ABE research literature suggesting that PA and word analysis can be taught and that direct instruction in word analysis may be effective with ABE students (NRP, pp. 2-4, 2-5, 2-92). Because the NRP research base is larger, however, the NRP report was also able to identify specific instructional strategies that work with children.

Teaching Strategies

Idea 2: To teach phonemic awareness skills to ABE beginning and intermediate readers, provide focused and explicit instruction on one or two PA skills rather than teaching a combination of three or more skills. Focusing on two skills in particular, blending and segmenting, may be most effective (pp. 2-4 – 2-5).

K-6 Research. Children taught one or two PA skills, especially blending and segmenting, improved their PA abilities and other reading skills more than those who were taught three or more PA skills (pp. 2-4 – 2-5). Segmenting involves teaching students how to segment words into their individual phonemes (e.g., count the number of sounds in the word ***cat: c-a-t***). Blending involves teaching students how to put individual sounds together to form a word (e.g., say the word that has the sounds ***c-a-t: cat***).

Idea 3: To teach phonemic awareness skills to ABE beginning and intermediate readers, teach students how to manipulate phonemes (e.g., how to blend and segment words) using letters rather than using only oral instruction.

K-6 Research. The NRP review found that "phoneme manipulation with letters" was more effective for normally developing readers and at-risk readers than "PA instruction without letters" (pp. 2-4 – 2-5). PA can be taught without reference to written words or letters. Students can play rhyming games for example, that focus on the first sound in words (say a word that rhymes with ***cat: bat)***. Phoneme manipulation can be taught with oral phoneme deletion exercises (take away the first sound in the word ***c-at: at***). In addition to these oral exercises, the manipulation of speech sounds can be practiced with exercises that use written words or letters. A simple exercise of this type is having students say the consonant sounds associated with written letters (e.g., ***b, t, m***). More complex exercises involve saying and blending the individual sounds in simple written words or pseudowords. Technically, because these exercises involve the use of letter-sound correspondences, they are phonics exercises, though the NRP treats any exercises at the word and sub-word level as phoneme manipulation exercises.

Idea 4: To improve ABE beginning and intermediate readers' ability to decode regularly spelled words and read familiar sight words, teach phonemic awareness.

K-6 Research. The NRP review of research at the K-6 level found that teaching PA leads to improvement in children's ability to read regularly spelled new words (pseudowords) and sight words (NRP, 2000b, p. 2-4).

Although effective, PA training was not quite as strong an instructional approach for older, disabled readers (those in Grades 1-6) suggesting that this group may be especially difficult to teach.

Idea 5 To teach decoding of regularly spelled words and recognition of irregularly spelled sight words to adult beginning and intermediate readers, use systematic as opposed to non-systematic phonics instruction.

K-6 Research. Systematic phonics instruction is better than non-systematic phonics instruction for improving children's ability to read regular words (and pseudowords) and irregularly spelled words (p. 2-92). The NRP review found that, on average, children's reading achievement is better when they are exposed to systematic phonics instruction as opposed to programs that teach phonics incidentally or "as needed" during reading instruction (as is done in many whole word or whole language programs).

Idea 6 To teach decoding of regularly spelled words and recognition of irregularly spelled sight words to adult beginning and intermediate readers, use systematic programs that focus on individual phonemes or that focus on larger parts of words.

K-6 Research. Three types of systematic phonics programs were compared in the NRP review and all were found to be equally effective (p. 2-93):

> (1) Synthetic phonics programs which emphasized teaching students to convert letters (graphemes) into sounds (phonemes) and then to blend the sounds to form recognizable words; (2) larger-unit phonics programs which emphasized the analysis and blending of larger subparts of words (i.e., onsets, rimes, phonograms, spelling patterns) as well as phonemes; (3) miscellaneous phonics programs that taught phonics systematically but did this in other ways not covered by the synthetic or larger-unit categories or were unclear about the nature of the approach.

Idea 7 To teach word recognition, use fluency instruction (repeated readings and guided oral reading, for example) to supplement regular word recognition instruction.

K-12 Research. The NRP review of research related to fluency instruction finds strong support for the use of repeated, guided oral readings and other types of fluency instruction to increase word recognition achievement (p. 3-3).

Instructional Materials

Idea 8 Computer programs may be useful in teaching PA skills to adult beginning and intermediate readers.

K-6 Research. The NRP review did not evaluate specific instructional materials, although it did look at a few studies that used computers to teach PA skills (NRP, 2000b, p. 2-4, p. 2-44). It found that computer programs can be effective, although more research is needed.

Intensity and Duration

Idea 9 To teach adult beginning and intermediate readers PA, individual instruction, small group instruction, and classroom instruction may be used, though small group instruction may be most effective.

K-6 Research. The NRP review found that small-group PA instruction was more effective than teaching PA individually or in classrooms, although all approaches led to significant gains in PA ability (pp. 2-4 – 2-5). The Report cautions, however, that these results are based on correlational data, not on the experimental manipulation of class size (p. 2-44).

Idea 10 When teaching adult beginning and intermediate readers PA, too much as well as too little PA instruction may be ineffective.

K-6 Research. The NRP review of PA instruction research with children found that teaching PA from 5 to 18 hours total was most effective. Instruction that lasted a total of more than 18 hours or less than 5 was not as effective (pp. 2-4 – 2-5).

Teacher Preparation

The NRP review did not examine the effects of teacher training on PA and word analysis instruction. The report does discuss this issue, however, and that discussion applies to ABE instruction as well, where the level of teacher training is probably lower.

> ...the role of the teacher needs to be better understood... Some phonics programs require a sophisticated understanding of spelling, structural linguistics, and word etymology. Teachers who are handed the programs but are not provided with sufficient inservice training to use these programs effectively may become frustrated. In view of the evidence showing the effectiveness of systematic phonics instruction, it is important to ensure that the issue of how best to prepare teachers to carry out this teaching effectively and creatively is given high priority (NRP, 2000b, p. 2-135).

Learner Characteristics

Functional Reading Level

The research discussed above suggests that adult beginning readers of all ages and ability levels (at least those reading at or below GE 6) may benefit from PA and phonics training. The NRP findings related to PA training and functional reading level, however, may be especially relevant for ABE alphabetics instruction.

Idea 11 PA training may be most effective if provided immediately to adult non-readers and those just beginning to learn to read. Special PA training may be needed for adult beginning readers who are a little more advanced in their reading (reading at or above GE 1).

K-6 Research. The NRP review found that younger readers, those in kindergarten, benefited more from PA training, although it was effective for children in all grades from kindergarten through the grade six (NRP, 2000b, p. 2-24).

ESOL

The NRP review did not evaluate studies of children learning to read English as a second language. They looked only at the effects of PA training for non-English speaking children in their own languages.

Learning Disability

Idea 12 Although the same PA training that is useful for non-disabled readers may be effective for disabled readers, special PA training may be needed for adult beginning and intermediate readers who have a reading disability.

K-6 Research. The NRP review found that PA training is effective in improving PA for (a) at-risk readers (children in grade 1 with low reading scores), (b) disabled readers (those above grade 1 with low reading scores but normal cognitive ability), and (c) normally progressing readers. However, PA training is less effective in improving PA for disabled readers than for the other two groups. The reason for lower effects with disabled readers was not investigated, although the NRP report speculated that older readers might already have some PA skills, and so may have less room to grow. Or, older readers may be learning more advanced forms of PA (pp. 2-4, 2-5, 2-23). It is also possible, of course, that the effects are due to a reading disability.

Idea 13 Use systematic phonics programs with reading disabled adult beginning readers, the same programs that are effective with non-disabled readers.

K-6 Research. The NRP review found that the same phonics programs that are most effective for normally progressing readers (systematic phonics programs) are also more effective for disabled readers (p. 2-94).

Fluency

Definition

Reading fluency refers to the speed and ease with which we read. Beginning readers are not fluent. Their reading is choppy and filled with hesitations, mispronunciations, and false starts. Even mature readers' fluency can suffer when they encounter new and unfamiliar texts. Most of us are not comfortable reading esoteric scientific texts, for example, and if we have to read them, we read them more slowly and with more hesitations and mispronunciations than usual.

Fast and accurate decoding are two elements of fluent reading. A third is prosody, or reading with the proper rhythm, intonation, and expression (NRP, 2000b, p. 3-1).

> ...fluency may also include the ability to group words appropriately into meaningful grammatical units for interpretation... Fluency requires the rapid use of punctuation and the determination of where to place emphasis or where to pause to make sense of a text. Readers must carry out these aspects of interpretation rapidly—and usually without conscious attention. Thus, fluency helps enable reading comprehension by freeing cognitive resources for interpretation, but it is also implicated in the process of comprehension as it necessarily includes preliminary interpretive steps (p. 3-6).

Detailed studies of the way the eyes move during reading suggest that fluent reading is not the same as skimming or scanning a text, where a reader ignores or skips over words and sentences. The development of fluent reading involves learning to look at each word more quickly or efficiently (NRP, p. 3-9). The eye movements of poor readers or those with a reading disability reflect their lack of fluency. They take in less with each fixation of the eyes on a text, and move backwards or skip words more often than good readers (NRP, p. 3-9).

Guided oral reading and frequent independent reading are the major instructional techniques used to increase reading fluency. When teachers use guided oral reading, they listen to students read aloud and give them support and advice as they read. Some names of guided oral reading procedures are ***repeated reading, neurological impress, paired reading, shared reading, collaborative oral reading, and assisted reading*** (p. 3-1).

> Newer guided repeated oral reading techniques share several key features. First, most of these procedures require students to read and reread a text over and over. This repeated reading usually is done some number of times or until a prespecified level of proficiency has been reached. Second, many of these procedures increase the amount of oral reading practice that is available through the use of one-to-one instruction, tutors, audiotapes, peer guidance, or other means... Third, some of the procedures have carefully designed feedback routines for guiding the reader's performance (p. 3-11).

Encouraging frequent reading is a less explicit approach to teaching fluency than guided oral reading. Students are encouraged to read more on their own in order to increase their reading fluency. Some names of

programs that encourage frequent reading are ***sustained silent reading (SSR), Drop Everything and Read, and Accelerated Reader (AR)*** (pp. 3-1 – 3-2).

RATIONALE

Why should fluency be taught? Students who are not fluent readers will spend more time on decoding than they do on understanding the meaning of a text. Choppy, inaccurate reading will impede reading comprehension (Snow, Burns, & Griffin, 1998, cited in NRP, 2000b, p. 3-1). Reproducing the rhythm that the author of a text intended will help a reader understand the author's intended meaning.

Accurate word recognition or decoding is not enough to ensure comprehension of a text. Those "who do not develop reading fluency, no matter how bright they are, will continue to read slowly and with great effort" (p. 3-3).

ASSESSMENT

Fluency assessment usually includes measures of reading accuracy and reading rate or speed. Reading accuracy is the number or percentage of words read correctly and rate is the number of words read in a given amount of time such as the number of words read per minute. The student is usually asked to read aloud although measures of rate can also be obtained by timing how long it takes to read a passage of text silently.

Reading fluency can be measured formally with standardized tests such as the Gray Oral Reading Test (Weiderholt & Bryant, 1992) or informally with Informal Reading Inventories, miscue analysis, pausing indices, or measures of rate (NRP, p. 3-18).

> For example, informal reading inventories (IRI) require students to read grade-level passages aloud and silently. The teacher determines a reading level by calculating the proportion of words read accurately in the passage. To ensure that students do not focus solely on fluency—at the expense of comprehension—the student is expected to summarize or answer questions about the text.
>
> The National Assessment of Educational Progress fluency study... calculated speed and accuracy but performed most analyses on the basis of a four-point pausing scale. This scale provided a description of four levels of pausing efficiency with one point assigned to readings that were primarily word by word with no attention to the author's meaning, to four points for readings that attended to comprehension and that paused only at the boundaries of meaningful phrases and clauses (pp. 3-9 – 3-10).

Fluency Assessment: Principles and Trends

Question

Based upon assessment results, what are ABE learners' strengths and needs in fluency?

Two studies addressing ABE learners reading fluency were located. No studies were located that investigated the specific effects of language issues or learning disabilities on reading fluency. Although there is some ESOL research on fluency (e.g., McLeod & McLaughlin, 1986) it is, like a lot of other ESOL reading research, based on studies of students in post-secondary as opposed to ABE settings.

Fluency assessment for adults whose first language is not English is an issue that needs to be addressed. Obtaining reliable measures of oral reading accuracy is complicated by ***interference***, or a second-language learner's accent that results from the transfer of speech sounds from a first language to English. For example, in a descriptive study of advanced ESL learners' oral reading, pronunciation ability (oral reading accuracy) was found to vary based on the age at which an immigrant arrived in an English-speaking country (Piper & Cansin, 1988). How should oral reading accuracy be assessed when working with non-native speakers of English?

Principle 8 Fluency is an issue for adult beginning readers, intermediate readers, and perhaps for those reading at more advanced ABE levels. There are very large differences between adults with good and poor reading fluency, and adult beginning readers' fluency is similar to the fluency of children who are beginning readers. (Gallo, 1972; Mudd, 1987)

A 1972 large-scale NAEP study of young adults' literacy measured the silent reading rates of 26 to 35 year-olds as they read passages written at the 10th grade and college levels (Gallo, 1972). The average silent reading rate (speed) for those adults with poor fluency (those at the 25th percentile) was 145 words per minute, close to 100 words per minute slower than the rate for those with good fluency (75th percentile), and 40 words per minute slower than those with average fluency (50th percentile). Experimental results from a comparison of ABE beginning readers with reading-level matched children (approximately GE 1) suggest that the oral reading rate and accuracy (number of hesitations, corrections, and omissions) of adult beginning readers is similar to the rate and accuracy of children who are beginning to read. The use of decoding and contextual cues as reading strategies is similar between groups as well (Mudd, 1987).

Fluency Instruction: Principles and Trends

Two emerging principles related to fluency instruction were identified from the ABE reading instruction research. One is a general principle and the other is a principle related to teaching strategies. No additional principles or trends related to goals and setting, methods and materials, or learner characteristics were identified.

Overall

Questions

Does participation in adult basic education increase ABE students' reading fluency? Does fluency instruction lead to gains in reading achievement?

Principle 9 Fluency may be taught to ABE students and fluency practice may lead to increases in reading achievement. (Brock, 1998; McKane & Greene, 1996; Meyer, 1982; Tan, Moore, Dixon, & Nicholson, 1994; Venezky, Bristow, & Sabatini, 1994)

Results from two experimental studies suggest that teaching fluency leads to increases in reading achievement. In one of the studies, fluency instruction was effective with intermediate adult readers attending a technical school (Meyer, 1982) and in the other with beginning adult readers in a prison setting (McKane & Greene, 1996).

Fluency instruction in the technical school consisted of seven hours of instruction over a period of two or more weeks that included listening to taped versions of passages while simultaneously reading them aloud using typed transcripts. The difficulty level of the passages was one grade level above the GE score a student received on a standardized test of reading comprehension ability (the Tests of Adult Basic Education or TABE). Students practiced re-reading the passage while listening until they felt they could read it aloud on their own to the instructor. When they read two passages with 90% accuracy (mispronouncing no more than 10% of the words in a passage), they were given the next highest grade level passages to work with. Students using this approach significantly increased their vocabulary and total reading scores (comprehension and vocabulary combined) on the TABE, but not their comprehension scores (GEs were used in the analysis). The study's author suggests that fluency practice improved students' word recognition, implying that it helped them to recognize words that they already knew the meanings of and that this led to the increase in the vocabulary and combined vocabulary-comprehension scores.

Results from the prison setting (McKane & Greene, 1996) suggest that using a computer software fluency program with adult beginning readers (reading below GE 3) leads to an increase in total reading achievement (comprehension and vocabulary combined on the TABE; non-equal-interval GE scores may have been used in

the analysis). This computer-based instruction provides practice in improving the rate and accuracy of letter, syllable, and word recognition, as well as phrase, sentence, and paragraph reading. The smaller units are practiced to a criterion level before the introduction of larger units.

One non-experimental study looked for increases in reading rate that might result from fluency practice (Tan, Moore, Dixon, & Nicholson, 1994). In this study (which used a single-subject, multiple-baseline, reversal design), three ESL students reading at about the 1st or 2nd grade level were taught to rapidly identify isolated words taken from a passage. They then practiced reading this passage fluently (with increased rate and accuracy). These students had sustained increases in their word and passage fluency, but not in passage comprehension.

In a case study of an adult receiving one-to-one tutoring, increases in fluency (accuracy during oral reading) were observed during instruction that focused on the adult's strengths in oral language using a language experience approach (discussion and dictation of a picture book story) along with word recognition practice and repeated readings using the student's dictated story (Brock, 1998).

Finally, a non-experimental study, which directly addresses the first question posed above, presents somewhat negative results. Results from this study suggest that participation in a large ABE program utilizing trained teachers does not lead to increases in oral reading fluency (Venezky, Bristow, & Sabatini, 1994).

Goals and Setting

Questions

Does participation in a program specifically aligned with one of the three major ABE goals or settings lead to a greater increase in reading fluency than participation in another type of program? Does setting affect the degree to which fluency instruction increases achievement in other aspects of reading?

No research was found that compares the effects of fluency instruction in programs aligned with one of the three major ABE goals or settings: general functional literacy, workplace literacy, or family literacy.

Question

Within any one type of program, is it possible to increase fluency, and is instruction related to fluency effective in increasing other aspects of reading?

All of the research described above, with one exception (Meyer, 1982), took place in general functional literacy programs.

Instructional Methods and Material

Several studies that touch on teaching strategies for fluency were found, and one study investigated the effects on fluency of the length of time students spent in a program. However, no studies related to the separate effects of instructional material or teacher preparation were found.

Teaching Strategies

Question

What specific teaching strategies or techniques can be used to increase fluency?

Principle 10 Fluency may be taught using approaches that include the repeated reading of passages of text, words from texts, and other text units. (Brock, 1998; Meyer, 1982; McKane & Greene, 1996; Tan, Moore, Dixon, & Nicholson, 1994)

Several studies, all discussed above, have used repeated reading to improve student fluency. Students read the same text several times until they are able to read it rapidly and accurately. These studies, two experimental and two non-experimental, differ in the type of text they focus on during fluency instruction: whole passages of text, isolated words, or a mixture of text types. More research is needed to determine which of these may be more effective.

In the approach that focuses on re-reading passages of text, adult learners were taught how to read passages of text out loud (orally) while listening to them on audiotape (Meyer, 1982). Although the texts were challenging, one grade level above a learner's reading grade level, listening provided enough pronunciation help for students to reach 90% accuracy on two texts before being given more difficult ones to work on. During this study, students received a total of seven hours of fluency instruction over two or more weeks of class while receiving no other reading instruction. Scores on measures of vocabulary and total reading (vocabulary and comprehension combined) on a standardized test (the TABE) increased significantly.

In the approach that focuses on re-reading single words from a text, used with beginning ESL readers, potentially difficult words in a reading passage are identified and then these isolated words are practiced until students can read all the words accurately at a rate of about 1.5 seconds per word. Passage reading is then practiced (with oral reading followed by comprehension questions). For the three beginning ESL readers (reading at GE 0-3), this led to an increase in word recognition fluency and accuracy, and oral reading accuracy, but not to sustained increases in comprehension (Tan et al., 1994).

In an approach that focused on a mixture of text types, a components strategy towards fluency instruction was taken (McKane & Greene, 1996). Adult learners used a computer software program that first identifies areas or

components of reading in which students lack automaticity (adequate accuracy and rate). The program then provides audio-visual practice in the weakest areas. Practice starts with lower level processes or smaller units and progresses to larger units as accuracy and rate criteria are met. These units include letters, regular letter combinations representing real and nonsense syllables, real words, and nonwords. Practice in fluently reading phrases, sentences, and paragraphs follows. Targeting areas in which automaticity is weak in this way led to increases in reading comprehension achievement for these beginning adult readers (those reading below GE 3; non-equal-interval GE scores may have been used in this analysis).

A case study (Brock, 1998) illustrates how repeated reading might be used in a tutoring situation. In this study of an adult receiving one-to-one tutoring, increases in fluency were observed following instruction that included repeated readings and focused on the adult's strengths in oral language. Instruction began with language experience exercises. The student looked at a picture book, discussed the story depicted in the book, and then dictated a story based on the pictures. Instruction also included word recognition practice, using the limited number of words that appeared in the picture book, and repeated readings using the student's dictated story.

Intensity and Duration of Instruction

Question

Does more intense fluency instruction, or instruction that is of longer duration, increase fluency ability?

No trends could be drawn from the research related to the intensity and duration of fluency instruction. Only one study attempted to relate the duration of instruction to changes in students' reading fluency (Venezky, Bristow, & Sabatini, 1994). Experimental results from this study, in which one group of students (those attending day classes) received three times the amount of instruction as those in another group (attending evening classes), suggest that oral reading fluency (accuracy) does not increase as the total number of hours of instruction increases. However, there were no gains overall in reading fluency, so differential gains based on hours of instructional time might not be expected.

Learner Characteristics

Of the factors associated with learner characteristics, no research was found related to the effects of motivation on ABE students' fluency instruction. In addition, there was not enough research to derive trends related to reading level or English language ability.

Functional Reading Level

Question

Are certain forms of reading fluency instruction more effective for students reading at a particular reading level (for beginning versus more advanced readers, for example)?

More fluency studies with adults are needed to determine whether fluency instruction is more or less effective for adults at different reading levels. Results from two studies are somewhat contradictory. One (McKane & Greene, 1996) suggests that developing automaticity (accuracy and rate) in areas of the reading process where an adult learner's fluency is diagnosed as weakest (letter, syllable, word, phrase, sentence, and/or paragraph reading) leads to increases in reading achievement for beginning readers (those at GE 3 based on the TABE total reading score), but not for better readers (those reading between GE 3.1 to 6.1 or between 6.1 to 9.0). Another study, however, suggests that adults reading at about GE 5 or 6 can benefit from fluency instruction (Me, 1982). As noted above, both studies may have used GE scores in their analyses.

Ideas for Fluency Instruction from K-12 Research

The National Reading Panel (NRP) findings related to fluency instruction at the K-12 level are based on a much larger set of studies than exist in the ABE fluency research base. The major ABE research results are supported by the NRP findings, although the NRP findings extend beyond those from the ABE research base.

ABE research related to fluency assessment suggests that beginning adult readers lack fluency, as do children learning to read. Emerging principles from the ABE research base related to fluency instruction suggest that fluency can be taught to adults using approaches that include repeated readings of text, and, that developing fluency can sometimes lead to increases in reading achievement. The NRP review also found that fluency can be taught, but it found a much stronger relationship between fluency instruction and increased reading comprehension achievement. The NRP results also suggest that fluency instruction is beneficial for students with reading problems through grade 12, not just for beginning readers. Finally, various approaches to fluency instruction have been evaluated at the K-12 level and are reviewed in the NRP report.

Most of the topics important to ABE instruction are not addressed by the NRP review of fluency research. Unlike the large research base used in the NRP review of alphabetics research, the fluency research base at the K-12 level is relatively small. Fourteen studies were available for the NRP fluency meta-analysis. Separating out the various factors related to the ABE topics was not possible with such a small set of studies. Two of the ABE topics are covered by the K-12 research: Teaching Strategies and Functional Reading Level.

Goals and Setting

Unlike the NRP review of alpabetics research, the review of research related to fluency instruction did not evaluate the effects of socioeconomic status or other setting variables. The research base for K-12 fluency instruction was much smaller than the research base for alphabetics instruction.

Instructional Methods and Material

The NRP review supports trends from the ABE research base suggesting that fluency can be taught to adults and that developing fluency can sometimes lead to increases in reading achievement. Of the topics important to adult education, the NRP data address Teaching Strategies directly. The NRP review does not make research-based conclusions related to Instructional Materials, Intensity and Duration, and Teacher Preparation, although some preliminary comments related to Materials and Teacher Preparation are presented.

Teaching Strategies

Idea 14 To improve ABE readers' fluency (as well as word recognition and reading comprehension achievement), use repeated guided oral reading procedures.

K-12 Research. The NRP review of research at the K-12 level found that "procedures that have students reading passages orally multiple times while receiving guidance or feedback from peers, parents, or teachers are effective in improving a variety of reading skills" (p. 3-20). These repeated reading procedures accompanied by guidance from others lead to increases in reading fluency as well as increased word recognition and reading comprehension achievement (p. 3-18). Many procedures, such as repeated reading (with and without feedback), paired reading, shared reading, and collaborative or assisted oral reading, seem to be effective although there was not enough information to compare their relative effectiveness (p. 3-19).

Idea 15 Encouraging adults to read independently more often may not lead to improvements in reading achievement without other forms of reading instruction.

K-12 Research. The NRP review of procedures such as Sustained Silent Reading and others that encourage students to read more (and thus perhaps develop their reading fluency) does not find that these approaches are effective in improving students' reading (p. 3-27).

Idea 16 Use systematic phonics instruction (as opposed to non-systematic or incidental phonics instruction) to improve adult beginning readers' reading fluency.

K-6 Research. The NRP review of research related to phonics instruction found that children's reading fluency improves when they are taught decoding using systematic approaches to phonics instruction (p. 2-113).

Instructional Materials

The NRP review does not evaluate specific materials used for fluency instruction. It does note, however, that repeated and guided reading is a relatively simple procedure that uses text as opposed to other special equipment or material (p. 3-20).

It is also clear that these procedures are not particularly difficult to use; nor do they require lots of special equipment or materials, although it is uncertain how widely used they are at this time.

Teacher Preparation

As with instructional materials, the NRP review does not evaluate the effects of teacher preparation, but notes that the procedures "are not particularly difficult to use" (p. 3-20).

Learner Characteristics

Functional Reading Level

Trends in the ABE research suggest that ABE beginning readers may benefit from fluency instruction, but that more advanced readers may not. Results for children, however, are somewhat different.

Idea 17 Most ABE learners receiving reading instruction could be classified as poor readers. Fluency instruction may be especially effective for improving poor readers' reading achievement, regardless of their reading grade equivalent.

K-6 Research. The NRP review found that fluency instruction is effective for normally achieving readers at least through the 4th grade. This may support a trend from ABE research suggesting that adult beginning readers (those reading, roughly, up to about the 3rd or 4th grade level) also benefit from fluency instruction. The NRP also found that poor readers at all grade levels benefit, suggesting that adults reading above the 3-4 GE in reading may also benefit. More research is needed at the K-12 level to separate the effects of grade level in school and reading grade level equivalents.

Motivation

Although the NRP review does not address motivation directly, one major finding may be relevant to this topic, which is especially important in ABE settings, where attrition is often a problem. When looking at the immediate effects of fluency instruction on students' ability to read passages that were used during instruction, the NRP review found that reading improves from the first passage read to the final passage read. Fluency instruction immediately improves the reading rate, accuracy, and comprehension of passages read (pp. 3-15 – 3-16). Assuming that, based on the research discussed above, transfer to other passages that are not a part of instruction will occur after fluency practice of some length of time, the immediate benefits to adults may be motivational. Adult readers should see improvement in their reading fairly quickly, at least over the passages that they are practicing.

Vocabulary

Definition

Our vocabulary consists of the individual words we understand or know the meanings of. Our reading vocabulary consists of words that we understand as we read. It is possible to know the meaning of a word when we hear it spoken but still not be able to read it in print. This is common for beginning readers, whose oral vocabulary is often larger than their reading vocabulary. The depth of our knowledge for individual words can also vary. We may have a deep understanding of words that we use a lot, knowing all of the different definitions given for a word in a dictionary, for example. Or our knowledge may be shallow, as when we know only one of the several meanings for a word, or when we have heard a word only a few times but have never used it or checked on its definition (McKeown & Curtis, 1987).

The NRP identified five main methods for teaching vocabulary (NRP, 2000b, p. 4-3):

1. ***Explicit Instruction:*** Students are given definitions or other attributes of words to be learned.
2. ***Implicit Instruction:*** Students are exposed to words or given opportunities to do a great deal of reading.
3. ***Multimedia Methods:*** Vocabulary is taught by going beyond text to include other media such as graphic representations, hypertext, or American Sign Language that uses a haptic medium.
4. ***Capacity Methods:*** Practice is emphasized to increase capacity through making reading automatic.
5. ***Association Methods:*** Learners are encouraged to draw connections between what they do know and words they encounter that they do not know.

Rationale

Vocabulary is crucial for getting meaning from text. Without knowledge of the key vocabulary in a text, a reader may struggle to understand the writer's intended message.

> Vocabulary occupies an important position in learning to read. As a learner begins to read, reading vocabulary encountered in texts is mapped onto the oral vocabulary the learner brings to the task. The reader learns to translate the (relatively) unfamiliar words in print into speech, with the expectation that the speech forms will be easier to comprehend. Benefits in understanding text by applying letter-sound correspondences to printed material come about only if the target word is in the learner's oral vocabulary. When the word is not in the learner's oral vocabulary, it will not be understood when it occurs in print. Vocabulary occupies an important middle ground in learning to read. Oral vocabulary is a key to learning to make the transition from oral to written forms. Reading vocabulary is crucial to the comprehension processes of a skilled reader (NRP, p. 4-3)

Assessment

Vocabulary knowledge can be assessed in many ways, each of which may influence an instructor's view of a student's vocabulary ability.

Vocabulary tests can be formal and standardized, such as the ABLE (Adult Basic Learning Examination, Karlsen & Gardner, 1986) or they can be less formal, as may be the case when teachers make up vocabulary tests for their classes. Tests can ask for different kinds of responses. Some ask the learner to respond with longer, oral answers (such as, ***Tell me what the word automobile means***). Other, more common vocabulary tests are multiple-choice and may ask learners to read the questions and possible responses (NRP, 2000b, p. 4-14—4-15).

Asking students to read vocabulary test items may confound other aspects of reading, such as alphabetics and fluency, with vocabulary knowledge. If students cannot read or decode the words in a vocabulary test item, they may not be able to respond correctly even if they know the word when they hear it. Oral vocabulary tests may be more accurate measures of students' general knowledge of word meanings because they do not require decoding.

Whichever type of test is used,

> ...we can never know exactly how large a vocabulary an individual has. Instead, we often [use informal tests to] measure only specific vocabulary items that we want the individual to know, for example, in the context of a reading or a science lesson. Standardized tests attempt to deal with this by selecting words that differ widely in their familiarity. Persons who can correctly identify unfamiliar words are assumed to have larger vocabularies. The more unfamiliar [low frequency] words that can be identified, the larger the vocabulary. However, these are estimates, rather than precise measurements (NRP, p. 4-16).

Vocabulary Assessment: Principles and Trends

Question

Based upon assessment results, what are ABE learners' strengths and needs in vocabulary?

Although a few research studies describe adults' general level of vocabulary development, no studies were found related to the effects of language ability or learning disabilities on vocabulary knowledge.

Trend 7 ABE adult readers' vocabulary growth may be dependent upon reading ability. Although their life experience may give them an advantage on vocabulary knowledge at lower reading levels, this advantage may disappear at higher reading levels. (Greenberg, Ehri, & Perin, 1997)

Experimental results from a study that compared the vocabulary achievement of ABE adult readers to the vocabulary achievement of children matched for reading ability finds that adults' vocabulary knowledge is better than children's at reading GE 3 and 4, but not at reading GE 5. It should be noted that the measure of oral vocabulary knowledge used in this study (the Peabody Picture Vocabulary Test) might not contain as much adult-oriented content as a test developed specifically for adults (such as the ABLE Reading Vocabulary test).

Vocabulary Instruction: Principles and Trends

Overall

Questions

Does participation in adult basic education increase ABE students' vocabulary achievement? Does vocabulary instruction lead to increases in reading achievement?

Six studies were found that address the effects of instruction on vocabulary achievement (Byrne, Crowe, & Hale, 1996; Gold & Horn, 1982, and Gold & Johnson, 1982; Lazar, Bean, & Van Horn, 1998; McDonald, 1997; Nickse, 1988; Philliber, Spillman, & King, 1996; Venezky, Bristow, & Sabatini, 1994). Results from these studies were mixed, and so no trends or principles are drawn from the research. In the following discussion, only general descriptions of any procedures used are presented. More detailed descriptions are provided in the sections on specific subtopics.

Experimental results were mixed from one study of a specific approach to teaching reading that integrates listening, language, and basic reading skills instruction (reported in Gold & Horn, 1982, and Gold & Johnson, 1982). Learners demonstrated increased vocabulary knowledge on one measure (that used analogies) but not on another (knowledge of verbal opposites). Another experimental study found that participation in a family literacy program increased achievement on a combined measure of vocabulary and comprehension (Philliber, Spillman, & King, 1996). It should be noted that the design for this study included a post-hoc analysis with no control for initial group differences (and, possibly, the use of grade equivalent scores in the analysis).

Non-experimental results from the research were also mixed. Five non-experimental studies yielded nine results. One study used two measures of vocabulary knowledge (Lazar, Bean, & Van Horn, 1998), one used four (Byrne, Crowe, & Hale, 1996), and the remaining three used one measure each. Of the nine results, five were positive.

Participation in one ABE program using experienced teachers did not lead to increased vocabulary achievement (Venezky, Bristow, & Sabatini, 1994). In another program, literacy and workplace communication instruction did not lead to increased ability on three types of vocabulary tasks (defining words, understanding

figurative language, and using words in multiple contexts), but did on another type (recognizing synonyms) (Byrne, Crowe, & Hale, 1996). The remaining programs all had pre-post data suggesting growth in vocabulary knowledge (Lazar, Bean, & Van Horn, 1998; McDonald, 1997; Nickse, 1988) with one showing growth on both general functional vocabulary (as measured by the TABE) as well as content-specific, workplace vocabulary (Lazar, Bean, & Van Horn, 1998).

Goals and Setting

Questions

Does participation in a program specifically aligned with one of the three major ABE goal settings lead to a greater increase in reading vocabulary achievement than participation in another type of program? Does setting affect the degree to which vocabulary instruction increases achievement in other aspects of reading?

Trend 8 Teaching vocabulary within a family or workplace literacy program may lead to a greater increase in vocabulary achievement than instruction in other settings. (McDonald, 1997; Philliber, Spillman, & King, 1996)

Experimental results from one study of thirty-two family literacy programs in ten cities suggest that participation in a family literacy program leads to greater increases in "total reading" (vocabulary and comprehension scores on a standardized test combined) than non-family literacy programs (Philliber, Spillman, & King, 1996). It should be noted that the design for this study included a post-hoc analysis with no control for initial group differences and may have used grade equivalent scores as the unit of analysis. Descriptive results from one study of a classroom intervention suggest that integrating vocabulary instruction within a job-oriented setting will lead to greater increases in job-related vocabulary achievement than non-integrated approaches (McDonald, 1997).

Workplace Literacy

Question

Within a workplace literacy program, is it possible to increase vocabulary achievement?

No trends were found in the research related to vocabulary instruction in workplace literacy programs, which consisted of two non-experimental studies (Lazar, Bean, & Van Horn, 1998; McDonald, 1997). Results from the instructional interventions used in these two studies suggest that vocabulary knowledge may be increased in workplace settings. One literacy program located in a hospital setting (Lazar, Bean, & Van Horn, 1998) included classes consisting of: reading and discussion related to hospital tasks, demonstrations, simulations, small group work, practice in the use of work-related documents including charts and lists, and discussion related to job-

based communication, problem-solving, and attitude. Vocabulary achievement increased on a general measure of vocabulary (the TABE Vocabulary subtest) as well as on a measure of specific job-related vocabulary knowledge.

The other study of an instructional intervention took place in a vocational class for ESL adults (McDonald, 1997). Results suggest that teaching ESL students in a vocational class using specific, job-oriented tasks and content increases general functional vocabulary, as measured by a standardized test of vocabulary (the ABLE).

Family Literacy

Question

Within a family literacy program, is it possible to increase vocabulary achievement?

No trends were found related to vocabulary instruction in family literacy programs either. In one study with non-experimental results, parent literacy training within a family literacy program led to increases in vocabulary of about 1 GE (on the vocabulary subtest of the TABE) after 40-50 hours of instruction (Nickse, 1988). Instruction was given one-on-one by highly trained tutors who received 112 total hours of training before and during the course of instruction. Instruction focused on decoding, vocabulary, reading/listening comprehension, study skills, and writing and modeling of learning activities to use with children. It was structured to include demonstration, guided and independent practice, and evaluation activities.

Question

General Functional Literacy

Within a functional literacy program, is it possible to increase reading comprehension?

Trend 9 Teaching vocabulary within a general functional literacy program may lead to increases in vocabulary knowledge. (Gold & Horn, 1982, and Gold & Johnson, 1982; Venezky, Bristow, & Sabatini, 1994)

In a study with experimental results (reported in Gold & Horn, 1982, and Gold & Johnson, 1982), use of a specific teaching strategy called the Directed Listening—Language Experience Approach by trained tutors in one-to-one tutoring sessions led to an increase in adults' reading vocabulary achievement (on the word comprehension subtest of the Woodcock Reading Mastery Test). The program did not lead to an increase in oral vocabulary, or language ability (measured with the Detroit Test of Verbal Opposites). The Directed Listening approach was eclectic and included the discussion of topics of interest to adults, focusing on understanding; language experience; alphabetics; comprehension strategies; and a recreational reading program.

In another study, with non-experimental results, learners participating in a large ABE program for students at all levels of literacy ability did not show gains in reading vocabulary ability (as measured by the TABE), despite receiving instruction from experienced ABE teachers (Venezky, Bristow, & Sabatini, 1994).

Instructional Methods and Material

Teaching Strategies

Question

What specific teaching strategies or techniques for reading instruction can be used to increase reading vocabulary achievement?

Trend 10 Beginning readers' reading vocabulary may be increased using an approach that combines listening comprehension instruction in a content area, high-interest texts generated from listening comprehension exercises, and phonics and multi-sensory skills work using the same content-oriented texts. (Gold & Horn, 1982, and Gold & Johnson, 1982)

Experimental results from one study of a specific teaching strategy (reported in Gold and Horn, 1982, and Gold and Johnson, 1982) suggest that an approach that combines listening comprehension with the use of student-generated texts increases reading vocabulary, but not overall language ability (as measured by a test of oral vocabulary knowledge). This program focused on listening comprehension and used student-generated texts for word analysis and reading comprehension instruction. Improved decoding from the word analysis instruction might account for improved performance on the reading vocabulary measure if it enabled these beginning adult readers to read words that they previously understood but could not decode. One-to-one instruction by trained tutors might also have been a factor.

Instructional Material

Question

Does the use of specific instructional material lead to increased reading vocabulary achievement?

No trends related to the effects of instructional material were drawn from the research. A non-experimental result from one study suggests that including job-oriented content and tasks in a vocational class will increase job-related vocabulary knowledge (McDonald, 1997).

Intensity and Duration of Instruction

Question

Does more intense literacy instruction, or instruction that is of longer duration, increase reading vocabulary achievement?

Trend II Provided that participation in a program produces gains in vocabulary achievement, instruction that is longer in duration may lead to increases in reading vocabulary achievement. (Philliber, Spillman, & King, 1996; Nickse, 1988; Venezky, Bristow, & Sabatini, 1994)

The results were mixed from three studies in which the duration of instruction varied across groups. Experimental results from one study, in which one group of students received three times the amount of instruction as those in another group, suggest that reading vocabulary achievement does not increase as the total number of hours of instruction increases (Venezky, Bristow, & Sabatini, 1994). However, there were no gains overall in reading vocabulary, so differential gains based on hours of instructional time might not be expected.

Two results suggest that as adults stay longer in a program, their vocabulary achievement does increase. An analysis of 32 family literacy programs found gains in vocabulary achievement (on a combined vocabulary-comprehension measure) to be related to length of stay in the programs (Philliber, Spillman, & King, 1996). Those staying less than 50 hours gained very little, those staying 51-100 hours gained an average of 1.1 GE, and those staying more than 150 hours gained an average of 1.4 GE. A similar relationship between duration of instruction and gain in vocabulary achievement is seen in the results from the analysis of another family literacy program (Nickse, 1988). Average gains in vocabulary achievement increased from no gain for those receiving 25-30 hours of instruction to a gain of .8 GE for those attending for 41-50 hours. It should be noted that both of these studies used GE scores, which are not equal interval scores, as the unit of analysis.

None of these studies described specific approaches to vocabulary instruction. Vocabulary achievement was simply one measure used to evaluate overall program effects.

Teacher Preparation

Question

Does teacher preparation lead to increases in vocabulary achievement?

No trends related to teacher preparation were found. Although some studies describe extensive training methods for teachers and tutors (e.g., Nickse, 1988), none evaluates the effects of training on vocabulary achievement directly.

Learner Characteristics

No studies evaluating the effects of ABE students' reading or motivational levels on vocabulary learning were found.

ESOL

Question

Are certain forms of reading vocabulary instruction more effective for ABE students with different levels of language ability, particularly ABE students in ESOL classes?

It was not possible to draw trends from the one study having to do with language (McDonald, 1997). Non-experimental results from this study suggest that the use of job-oriented tasks and content with ESL students in a vocational class is effective in increasing their general functional reading ability (measured with the ABLE). It is not clear how students in the groups compared were different in language ability.

Ideas for Vocabulary Instruction from K-12 Research

The NRP review of vocabulary instruction research did not produce findings that were as strong as those related to alphabetics and fluency. The vocabulary research reviewed did not have the same breadth; the number of studies reviewed was smaller and studies of older students with reading disabilities and ESL students were not reviewed (NRP, p. 4-11). In addition, because not much research that met the NRP's criteria for inclusion was found, a less rigorous and more qualitative summary of the research was undertaken. For this reason, the suggestions listed below are labeled comments to distinguish them from the ideas derived from the stronger alphabetics and fluency research.

Nevertheless, the number of vocabulary studies meeting the NRP's criteria, though "small" relative to other areas studied by the NRP, was much larger than the number of ABE vocabulary research studies found. The NRP was able to identify many trends that may be useful for adult educators who teach reading vocabulary.

How are the results from the NRP review of K-12 vocabulary research related to vocabulary instruction for adults? The K-12 research does not address several of the topics important to adult basic education although it does address one topic not covered in other sections of the NRP review: assessment. Trends from the K-12 research also touch on the following ABE topics: goals and setting, teaching strategies, instructional materials, and functional reading level.

Trends from the NRP report that may be of particular interest or use to adult educators include those having to do with the importance of repetition and the use of multiple contexts in vocabulary instruction, the importance of active engagement, and the suggestion that restructuring tasks may be especially useful for at-risk learners.

Assessment

Although the research reviewed by the NRP did not directly address issues related to vocabulary assessment, the NRP completed a qualitative analysis of the ways in which researchers measure vocabulary and presented some tentative conclusions: (a) many measures of vocabulary are used and there is no one standard, so relying on only one measure may not provide sound results; (b) standardized tests may not be sensitive enough to measure the effects of some forms of instruction, so informal tests that more closely match instruction may be needed (p. 4-26).

Goals and Setting

The NRP review indirectly supports trends in the ABE research literature suggesting that vocabulary instruction in workplace and family literacy settings is effective.

Comment 1 To help provide repeated exposure to new vocabulary, teach ABE learners new words that will be useful to them in workplace or family settings.

K-12 Research. Some of the K-12 research on vocabulary instruction with children might explain why vocabulary instruction in workplace and family literacy settings with adults seems promising. A trend in vocabulary instruction research with children suggests that repeated exposure to new vocabulary in rich contexts is important for learning.

> Repeated exposure to vocabulary items is important for learning gains. The best gains were made in instruction that extended beyond single class periods and involved multiple exposures in authentic contexts beyond the classroom . . . [Therefore] vocabulary words should be those that the learner will find useful in many contexts. (NRP, 2000b, p. 4-4)

Instructional Methods and Material

Teaching Strategies

Comment 2 Encourage activities, such as wide reading, that will expose ABE learners to new vocabulary. Encouraging independent reading, however, assumes that what is read is read fluently (i.e., is at an appropriate reading level).

K-12 Research. Vocabulary can be learned incidentally:

Because of the rapid rate at which vocabulary is acquired, it has always been assumed that much vocabulary was learned incidentally. One instantiation of this method is found in vocabulary learning in the context of storybook reading. Recent research studies in the area suggest that indirect learning can definitely occur, and that vocabulary can be acquired through incidental exposure (p. 4-21).

Comment 3 Pre-teach vocabulary words that ABE learners will encounter in texts being used for instruction.

K-12 Research. Pre-teaching vocabulary words that occur in a text, before students begin reading, improves vocabulary acquisition (p. 4-4).

Comment 4 Restructure the texts and procedures used for vocabulary instruction when necessary so that students understand what they need to do when reading and learning new words. Examples of restructuring include substituting easy words for hard ones, explaining what a good definition consists of, working in pairs, and selecting especially relevant words. Restructuring may be most effective with low-achieving students.

K-12 Research. Trends from the NRP review suggest that restructuring vocabulary tasks when needed can improve vocabulary acquisition (pp. 4-4, 4-22).

Instructional Materials

Comment 5 Computer programs may be useful in teaching vocabulary to adults.

K-12 Research. The NRP review did not evaluate specific instructional materials, but identified four studies that suggest that computers may be effective either as supplements to regular instruction or to provide multi-media vocabulary instruction.

Learner Characteristics

Functional Reading Level

Comment 6 ABE vocabulary instruction should be appropriate for older students and tailored to their ability level.

K-12 Research. The NRP review found that the effects from various methods of vocabulary instruction are affected by student age and ability level (p. 4-18).

Reading Comprehension

Definition

Reading comprehension can be described as understanding a text that is read, or the process of constructing meaning from a text (NRP, 2000b, p. 4-5). Why do those who have studied reading comprehension describe it as a process of "construction" or "making meaning?" First of all, reading comprehension involves all of the elements of the reading process, described in earlier sections of this review, acting together. As comprehension takes place, words are decoded and associated with their meanings in the reader's memory, and phrases and sentences are processed rapidly or fluently enough so that the meanings derived from one word, phrase, or sentence are not lost before the next is processed.

Second, the writer who composed the text being read put together a whole, hopefully coherent, network of thoughts for the reader. This more or less coherent whole is recreated as needed, piece-by-piece, in the reader's memory without the benefit of live conversation, relying only on what is derived from the text and the reader's own prior knowledge or past experiences, also stored in memory. This complex network of ideas that represents a text in memory is constantly modified as the reading progresses. Problems in creating this representation, or understanding a specific text, may be encountered as the text is processed. Recognizing these problems and reasoning through and resolving them is a part of the comprehension process. Comprehension is an active process and the reader must interact and be engaged with the text for it to work well.

Comprehension is a strategic process and these strategies can be taught. Strategies are

> procedures that guide students as they attempt to read and write. For example, a reader may be taught to generate questions about the text as it is read. These questions are of the why, what, how, when, or where variety; and by generating and trying to answer them, the reader processes the text more actively (NRP, p. 4-40).

Typically, instruction of cognitive strategies employed during reading consists of:

1. The development of an awareness and understanding of the readers' own cognitive processes that are amenable to instruction and learning
2. A teacher guiding the reader or modeling for the reader the actions that the reader can take to enhance the comprehension processes used during reading
3. The reader practicing those strategies with the teacher assisting until the reader achieves a gradual internalization and independent mastery of those processes... (p. 4-40)

Rationale

Why should reading comprehension be taught? Comprehension is the purpose of reading. In order to get information from a text, remember it later, and use it effectively, whether for work or for pleasure, reading comprehension is essential. Many readers are not aware of comprehension strategies and are not likely to develop them on their own (NRP, p. 4-40).

Assessment

Students read extended texts when their reading comprehension is assessed. These may consist of just a few sentences for beginning readers to long passages for more advanced readers. Students who have constructed good representations of a text they have read will be able to recall and make inferences from specific ideas in the text. The most common form of assessment is question-asking, although many other tasks may be used. Multiple choice questions, short answer questions, cloze tests, and summarizing are examples of tasks used to assess comprehension.

Other measures may be used to determine whether students have learned specific comprehension strategies such as question generation, error detection (detection of comprehension errors while reading), and other forms of comprehension monitoring.

The NRP distinguishes between two broad types of assessment. Just as a teacher may use teacher-designed tasks or published tests to assess student reading comprehension, researchers conducting experiments may also use both researcher-designed and standardized tests. For both teachers and researchers, the assessments that they design may be more closely related than standardized tests to what they are teaching or investigating.

> ...experimenter tasks reflect near transfer [to practiced tasks or those used during instruction] and standardized tests reflect far transfer (generalization of what has been learned) (p. 4-42).

Reading Comprehension Assessment: Principles and Trends

Question

Based upon assessment results, what are ABE learners' strengths and needs in reading comprehension? Is one form of assessment best?

There are several studies that evaluate ABE students' reading comprehension ability. One of these also provides at least some information about ABE students with a reading disability and ABE students whose first language is not English. In addition to the above, comprehension is the only major topic area where research was found that begins to consider questions related to the quality of the tests used for assessment.

Principle 11 Adults who qualify for ABE have poor functional literacy comprehension achievement. Although they may be able to perform simple comprehension tasks such as recalling ideas from simple stories and locating a single piece of information in a simple text, they are often unable to combine (integrate and synthesize) information from longer or more complex texts. (Gold, 1983; Kirsch, Jungeblut, Jenkins, & Kolstad, 1993)

By definition, ABE students are those adults reading at Levels 1 and 2 (out of a total of five Levels) on the NALS measures of prose, document, and quantitative functional literacy (Adult Education and Family Literacy Act, Title II of the Workforce Investment Act, PL105-220, 1998; Kirsch et al., 1993). The NALS results are based on a sample of about 26,000 adults, aged 16 and older. These include a representative sample of the whole adult population in the United States (13,600), roughly 1,000 from each of 11 states, and 1,100 inmates in correctional institutions. NALS scores are arranged on a 500 point scale, with Level 1 scores ranging from 0 - 225 and Level 2 scores from 226 - 275. The average score for those taking the NALS is roughly 270, or the high end of Level 2 (averages of 272, 267, and 271 on the Prose, Document, and Quantitative scales respectively). The average score for those completing high school is 270 on the Prose scale. ABE students, then, are those whose functional reading comprehension ability is roughly the same as or lower than those completing 12 years of school (those receiving a high school diploma).

Those scoring at Level 1 on the NALS range from those who are unable to demonstrate an understanding of simple texts to those who are able to perform simple tasks such as locating a specific piece of information in a text. Seventy-eight percent of adults with 0-8 years of education score at Level 1.

Those scoring at Level 2 are able to locate information in a text, make simple inferences, and integrate pieces of information in simpler texts. They are generally not able to combine (integrate or synthesize) information from longer or more complex texts.

Additional research suggests that intermediate adult readers (those scoring at GE 4 – 6 on a standardized reading comprehension test) are able to recall information from simple stories (Gold, 1983).

Trend 12 When different assessment instruments are used to measure gain in reading comprehension achievement, or when the same instrument is used at several points over the course of instruction, results related to reading comprehension achievement may be extremely variable. Some comprehension measures may be more reliable than others. (Perin & Greenberg, 1993; Venezky, Bristow, & Sabatini, 1994)

Research: One experimental study, in which ABE students' reading comprehension was measured with two different tests at four points in time (once before, twice during, and once after instruction) found significantly larger gains for one group at time two on one measure, but not on another (Perin & Greenberg, 1993). In addition, one group's gain from time one to time four was significant on only one of the two measures. Growth on both measures was extremely variable over time. In a descriptive study, involving one group of ABE learners who were administered three tests of reading comprehension at three points in time, learners showed gain on all three measures from time one to time two, but on only one from time two to time three (Venezky, Bristow, & Sabatini, 1994). The three measures used were the TABE Reading Comprehension and the TALS Document and Quantitative tests. An analysis of the TABE and TALS found the TALS to be a more reliable measure of reading comprehension.

Trend 13 ABE adults' knowledge about reading, or their meta-comprehension, is more like that of children who are beginning readers. They are less aware than good readers are of strategies that can be used to monitor comprehension, view reading as decoding as opposed to comprehending text, and are less aware of the general structure of paragraphs and stories. They are aware of the influence of motivation, interest, and prior knowledge on reading. (Gambrel & Heathington, 1981)

Experimental results from one study in which ABE learners and skilled college readers were interviewed about their knowledge of reading comprehension suggest that ABE readers' metacomprehension ability is more like that of beginning readers described in the literature (Gambrel & Heathington, 1981). Interview results suggest that both groups are aware of the influence of motivation, interest, and prior knowledge on comprehension. ABE readers, however, are less aware of text structure, or how paragraphs and stories are organized, and strategies that can be used to resolve comprehension failure. Like younger beginning readers, they are more likely to associate reading with decoding as opposed to comprehending text.

ESOL

Questions

Is one form of reading comprehension assessment best for ABE students with lower levels of English language ability, particularly students in ESOL programs? Based upon assessment results, what are the strengths and needs in reading comprehension for ABE students with lower levels of English language ability?

Principle 12 ESL adults, on average, tend to have lower functional literacy comprehension achievement in English; the percentage of ESL adults among the ABE target population is greater than the percentage among the general adult population. (Kirsch, Jungeblut, Jenkins, & Kolstad, 1993)

Adults born outside this country, and likely to have learned a language other than English as their first language (ESL adults) score lower on the NALS than those born in the United States (Kirsch et al., 1993).

Learning Disability

Questions

Is one form of reading comprehension assessment best for ABE students with a learning disability? Based upon assessment results, what are the strengths and needs in reading comprehension for ABE learners with a learning disability?

Principle 13 Adults with a learning disability tend, on average, to have lower functional literacy comprehension achievement and are over-represented within the ABE target population. (Kirsch, Jungeblut, Jenkins, & Kolstad, 1993)

A little over 80% of all adults reporting that they have a learning disability score at Level 1 or 2 on the NALS assessment of functional literacy comprehension (Kirsch et al., 1993).

Reading Comprehension Instruction: Principles and Trends

There is more research on reading comprehension instruction than there is on any of the other major topics. The only subtopics for which there is no reading comprehension research are those related to learner characteristics, where only motivation studies were found.

Overall

Question

Does participation in adult basic education increase ABE students' reading comprehension achievement?

Principle 14 Participation in an adult literacy program may lead to an increase in reading comprehension achievement. (Alessi, Siegel, Silver, & Barnes, 1982; Boudett & Friedlander 1997; Conti 1985; Brooks, Davies, Ducke, Hutchison, Kendal, & Wilkin, 2001; Curtis & Chmelka, 1994; Darkenwald & Valentine, 1985; Fitzgerald & Young, 1997; Friedlander & Martinson, 1996; Gerber & Finn, 1998; Gorman & Moss, 1981; Hayes, 1989; Gretes & Green, 1994; Lazar, Bean, & Van Horn, 1998; McDonald, 1997; Mikulecky & Lloyd, 1997; Nickse, 1988; Perin & Greenberg, 1993; Philliber, Spillman, & King, 1996; Rich & Shepherd, 1993; Sheehan-Holt & Smith, 2000; Smith, 1996; Sticht, Armstrong, Hickey, & Caylor, 1987, and Sticht, 1989, 1997; Venezky, Bristow, & Sabatini, 1994)

Results from experimental research that evaluates ABE programs' overall effectiveness in increasing reading comprehension achievement are mixed, with positive results slightly outnumbering negative results. One study reporting negative results evaluated five ABE programs in a large metropolitan area and found overall increases in reading comprehension in only one of the programs (Boudett & Friedlander, 1997, a re-analysis of data from Friedlander & Martinson, 1996). Another study, using a time series design (; Jults were tested at four times during the course of instruction), found no evidence for increased reading comprehension ability on one measure, a reading test. Based on structured teacher observations, however, it found some, albeit slight, evidence for increased comprehension achievement (Perin & Greenberg, 1993).

Five experimental studies reported positive results. One evaluation of thirty-two programs in ten cities found overall gains in reading comprehension achievement (the measure used was "total reading" from a standardized test, which included tests of vocabulary and comprehension; Philliber, Spillman, & King, 1996). It should be noted that the design for this study included a post-hoc analysis with no control for initial group differences (and might have used grade equivalent gain scores as the unit of analysis). One of four classroom intervention studies found

support for a particular teaching style (Conti, 1985), although the measure used tested math ability as well as reading comprehension. The three other classroom interventions found strong support for teaching specific comprehension strategies: summarizing and self-questioning (Rich & Shepherd, 1993), locating information and paraphrasing (Alessi, Siegel, Silver, & Barnes, 1982), and scanning, inferencing, organizing, summarizing, question answering, and vocabulary development (Gretes & Green, 1994).

These mixed, slightly positive results from the experimental research suggest that it is not an easy task to construct an adult literacy program that will lead to gains in reading comprehension for participating adults.

Results from non-experimental research tend to support those experimental results discussed above that find positive effects for reading comprehension instruction. Gains in reading comprehension following a wide variety of instructional interventions are reported in some studies, but control groups and/or significance testing were not used (Curtis & Chmelka, 1994; Brooks, Davies, Ducke, Hutchison, Kendal, & Wilkin, 2001; Darkenwald & Valentine, 1985; Gerber & Finn, 1998; Gorman & Moss, 1981; Lazar, Bean, & Van Horn, 1998; McDonald, 1997; Mikulecky & Lloyd, 1997; Nickse, 1988). Of these, the strongest positive result comes from a large-scale study of ABE programs in Britain (Brooks et al.). Using a test of functional literacy comprehension with 1224 adults in 71 basic skills programs, the study found significant increases in reading comprehension after an average of approximately thirty hours of instruction.

One influential study that has not appeared in a peer-reviewed journal, but that is cited regularly, suggests that adult literacy programs can increase reading comprehension achievement (Sticht et al., 1987, and Sticht, 1989, 1997). Finally, one correlational study finds an association between program participation and increases in reading comprehension achievement (Fitzgerald & Young, 1997) while another reports an association between practicing reading in natural settings and increases in reading achievement (Smith, 1996).

On the other hand, another correlational study finds no relationship between reported program participation and reading comprehension achievement (Sheehan-Holt & Smith, 2000) and the evaluation of one ABE literacy program yields results similar to those of Perin & Greenberg (1993), where increases in reading comprehension achievement were obtained on one measure of reading comprehension, but not on another (Venezky, Bristow, & Sabatini, 1994).

A relatively large number of the research studies cited above have used reading comprehension to measure the overall effects of participation in ABE programs. These include, in addition to the studies with experimental results mentioned above: Brooks, Davies, Ducke, Hutchison, Kendal, & Wilkin, 2001; Fitzgerald & Young, 1997; Lazar, Bean, & Van Horn, 1998; Mikulecky & Lloyd, 1997; Hayes, 1989; Nickse, 1988; Darkenwald & Valentine, 1985; and Venezky, Bristow, & Sabatini, 1994. Although some of this research has focused on specific techniques that can be used to improve reading comprehension, most has not. Instructional approaches used in these programs are often not described in detail. Some of the research aggregates data across multiple programs that may use multiple approaches to reading comprehension instruction. Consequently, some of the research studies suggesting that improvement in comprehension is possible are unable to provide specific suggestions for actually

improving the reading comprehension of individual adults in ABE programs. One final issue related to these studies is that a few use a standardized test's "total reading" score to measure growth, which may include measures of vocabulary and word recognition as well as reading comprehension. Although they may provide some of the best evidence available regarding reading comprehension achievement, these studies, for all of the reasons mentioned above, need to be interpreted cautiously.

Trend 14 Change in reading comprehension achievement resulting from instruction may be extremely variable and any change observed may depend on the test used to measure achievement. (Perin, & Greenberg, 1993; Venezky, Bristow, & Sabatini, 1994)

Only one of the experimental studies discussed above involved multiple measurements over time (Perin & Greenberg, 1993). It found that adults' gains in reading achievement over time are variable, and that they may depend upon the type of comprehension test administered. This is supported by results reported in one non-experimental study (Venezky, Bristow, & Sabatini, 1994).

Goals and Setting

Questions

Does participation in a program specifically aligned with one of the three major ABE goals or settings lead to a greater increase in reading comprehension achievement than participation in another type of program? Does setting affect the degree to which comprehension instruction increases achievement in other aspects of reading?

The three major ABE goals or settings are general functional literacy, family literacy, and workplace literacy. Several research studies have compared the reading comprehension achievement of adults in one type of setting to the reading comprehension achievement of adults in another. The trend resulting from these studies will be discussed first. Whether reading comprehension can be improved within any one of these types of programs, without regard to any other type of program, is a different question. This question will be addressed in the sections that follow (under the headings workplace literacy, family literacy, and general functional literacy).

Trend 15 In some situations, participation in a workplace literacy or family literacy program may lead to greater increases in reading achievement than participation in other types of programs. (Philliber, Spillman, & King, 1996; Sheehan-Holt & Smith, 2000; Sticht, Armstrong, Hickey, & Caylor, 1987, and Sticht, 1989, 1997)

Experimental results from one study suggest that adult learners in family literacy programs at thirty-two locations in ten cities increased their reading comprehension achievement more than those in non-family literacy programs in another city's program that used the same measure of comprehension (the measure used was "total reading" from a standardized test, which included tests of vocabulary and comprehension; Philliber,

Spillman, & King, 1996). It should be noted that the design for this study included a post-hoc analysis with no control for initial group differences (and might have used grade equivalent gain scores as the unit of analysis). One strand of influential research, not published in a peer-reviewed journal but included here because it is widely cited in the ABE literature, finds that some work-related literacy programs that use job-specific content during instruction lead to (a) the same increase in general literacy as those using non-content based instruction, and (b) a much higher increase in the comprehension of work-related material (Sticht et al., 1987, and Sticht, 1989, 1997).

In contrast to the above, one non-experimental study (Sheehan-Holt & Smith, 2000, an ex post facto regression analysis using the NALS data) compares adults who report participating in job-related programs with those reporting participation in community-based tutoring programs and finds no relationship between reading comprehension achievement and type of program.

Workplace Literacy

Question

Within a workplace literacy program, is it possible to increase reading comprehension?

Trnd 16 It may be possible to increase reading comprehension in a workplace literacy program.(Lazar, Bean, & Van Horn, 1998; McDonald, 1997; Mikulecky & Lloyd, 1997; Perin & Greenberg, 1993; Sticht, Armstrong, Hickey, & Caylor, 1987, and Sticht, 1989, 1997)

When adults completing a work-related program of instruction in an experimental study are compared with those who do not attend as long, their overall reading comprehension is higher on one of two measures of reading comprehension (Perin & Greenberg, 1993). Using a more traditional experimental design, another study identified several specific characteristics of workplace literacy programs that lead to increased reading comprehension achievement (Mikulecky & Lloyd, 1997).

Two non-experimental studies using reading comprehension pretests and posttests, along with a strong non-peer-reviewed strand of research, also describe methods that lead to increases in reading comprehension (Lazar, Bean, & Van Horn, 1998; McDonald, 1997; Sticht et al., 1987, and Sticht, 1989, 1997). All together, the five studies suggest that it is possible to increase ABE adults' reading comprehension in a wide variety of work-related literacy programs, including hospital settings, a vocational classroom, military job-training programs, manufacturing plants, an insurance company, and a women's prison.

Family Literacy

Question

Within a family literacy program, is it possible to increase reading comprehension?

Trnd 17 It may be possible to increase reading comprehension in a family literacy program. (Hayes, 1989; Nickse, 1988; Philliber, Spillman, & King, 1996)

Two non-experimental and one experimental study found that literacy training in family literacy settings can lead to increases in reading comprehension ability. Each of three studies reports gains of about one Grade Equivalent (GE) for anywhere from approximately 40 to 130 hours of instruction (Hayes, 1989; Nickse, 1988; Philliber, Spillman, & King, 1996, using a combined comprehension and vocabulary test score result, a post-hoc analysis with no control for initial group differences, and, perhaps, grade equivalent gain scores as the unit of analysis).

General Functional Literacy

Question

Within a functional literacy program, is it possible to increase reading comprehension?

Trnd 18 It may be possible to increase reading comprehension in a general functional literacy program. (Brooks, Davies, Ducke, Hutchinson, Kendall, & Wilkin, 2001; Darkenwald & Valentine, 1985; Fitzgerald & Young, 1997; Greenberg, 1998; Gretes & Green, 1994; Purcell-Gates, 1993; Scully, 1991; Venezky, Bristow, & Sabatini, 1994)

One experimental and virtually all of the non-experimental studies conducted within functional literacy programs report positive results on measures of reading comprehension.

An experimental study of a computer-based program for intermediate ABE readers (reading at GE 4 – 9 based on TABE total reading scores) finds that reading comprehension can be increased with instruction in several specific comprehension strategies using functional reading material, such as texts that provide health, consumer, and voting information for adults (Gretes & Green, 1994).

Four non-experimental studies reporting results from single groups receiving pretests and posttests find that on four out of five measures (one study used two measures), adult ABE learners' reading comprehension increased after they participated in functional literacy programs.

An analysis of 71 basic skills programs in Britain suggests that ABE learners, especially those attending for more than 50 hours, benefit slightly from instruction in general functional literacy programs (Brooks et al., 2001).

Another study involved students in ABE and ESL programs in 20 states (Fitzgerald & Young, 1997). It found an increase of roughly 1 GE on the TABE and CASAS for those involved in pre-secondary and secondary ABE classes.

In a survey conducted by telephone, a large percentage of a random sample of adults who had participated in one state's ABE programs reported that their reading was better after having participated (Darkenwald & Valentine, 1985). A fourth non-experimental study looked at one program in more detail and found that, overall, students' reading comprehension increased on a measure of functional reading comprehension (the TALS Document test) but not on a measure focusing more on basic reading skills (the TABE) (Venezky et al., 1994).

In addition to studies of large ABE programs, three case studies report that one-to-one tutoring by experienced teachers leads to increases in adults' ability to read and understand functional texts based on a variety of measures, including teacher observation (Greenberg, 1998; Purcell-Gates, 1993; Scully, 1991).

Instructional Methods and Material

Teaching Strategies

Question

What specific teaching strategies or techniques for reading instruction can be used to increase reading comprehension achievement?

Eight experimental studies dealing directly with reading comprehension teaching strategies address this question. Because there is very little overlap between the issues considered in these eight studies, five separate trends and two principles are drawn from the studies. The two principles are supported by five experimental results and each trend is supported by at least one experimental result (one study has two experimental results). The results are divided roughly into three categories: (1) direct reading comprehension instruction, (2) multiple-components instruction, and (3) enabling instruction or setting. Most research related to ABE reading comprehension teaching strategies fits into the enabling category. Rather than addressing reading comprehension directly, other instructional variables are manipulated in order to address it indirectly.

Direct Reading Comprehension Instruction

Principle 15: Providing explicit instruction in reading comprehension strategies may lead to increased reading comprehension achievement. (Alessi, Siegel, Silver, & Barnes, 1982; Mikulecky & Lloyd, 1997; Rich & Shepherd, 1993)

Results from a study of instructional strategies used in workplace literacy settings with adult learners who are not beginning readers (roughly GE 6 or higher) suggest that providing explicit, as opposed to incidental, instruction in reading comprehension strategies leads to increased reading comprehension achievement (Mikulecky, 1997). Comprehension strategies taught include skimming, reading more carefully in order to monitor comprehension, using headings, and focusing on topics. Although this approach was not used in isolation, it was evaluated in relative isolation statistically to determine its effect on reading comprehension, controlling for the influence of other factors.

In another experimental study, instruction in the use of two specific reading comprehension strategies was effective in improving intermediate adult readers' comprehension (adults with GE scores from high 4 to 7 on a standardized test of reading comprehension) (Rich & Shepherd, 1993). Students in one group were taught how to ask themselves questions about a text as they read (who, what, when, where, how, and why questions). Students in another group were taught how to verbally summarize a text as they read. A third group was taught how to use both strategies as they read. All students worked in small groups, receiving guided instruction from a teacher who gradually had students take on the teacher's role – leading group questioning or summarizing practice. Students were told how to use the strategies, the rationale for using them, and how to check on or monitor their understanding as they used them. In addition to small group work, students spent a significant portion of each 45-minute lesson, 15 minutes, working on their own applying a strategy as they took practice comprehension tests. Those in the group that learned how to use both strategies outperformed control groups that read the same texts or took the practice tests but did not receive strategy instruction.

The combined approach was found to be effective with two measures of comprehension: free recall (the number of ideas from the text that were mentioned as the passage was recalled) and questions (multiple choice and short answer). The summarizing and questioning strategies were effective by themselves on the questioning test. Contrary to what the researchers had predicted, the combined summarizing and questioning strategy was not more effective than the use of either strategy by itself. Self-questioning seemed to be an especially effective strategy. The total number of sessions, six in all, was small. More time to learn the combined strategy may have been needed.

In a third experimental study, an early but fairly sophisticated form of computer-based instruction was found to improve adults' performance on two comprehension tasks: locating and paraphrasing information in texts (Alessi, Siegel, Silver, & Barnes, 1982). Using this program, intermediate adult readers (at GE 4-6 based on a standardized test of reading comprehension) completed forty self-paced reading comprehension lessons in twenty hours over a two-month period. Follow-up testing one month later showed that initial gains had been maintained. During instruction, comprehension tasks and concepts were presented clearly and overtly and students read and re-read passages and answered questions. They learned how to locate information in order to answer literal comprehension questions (who, what, when, where, why, and how questions that could be answered by looking back at the text) and how to recognize paraphrases of sentences in the passages that were read. The computer kept track of progress, and simpler tasks were mastered before more difficult ones were presented. Passages and questions were sometimes presented more than once, with the computer making small changes in the text to draw student attention to important information and text features. Specific

feedback was given and computer graphics such as boxes, arrows, and underlining were used to direct student attention and model correct responses. Although students improved their ability to locate and paraphrase information, their new skills did not transfer to a comprehension task that was not taught, recognizing main ideas in passages.

Multiple-components Instruction

Principle 16: Combining comprehension instruction with instruction in various other components of reading may lead to increased reading comprehension achievement. (Curtis & Longo, 1997; Gretes & Green, 1994; Gold & Horn, 1982 and Gold & Johnson, 1982)

One multiple-components strategy (reported in Gold and Horn, 1982, and Gold and Johnson, 1982) includes many elements, and any one or combination of elements could be responsible for the increase in reading comprehension found for beginning readers (those scoring below GE 5 on measures of reading comprehension). These elements include: (a) one-to-one instruction by (b) trained tutors that includes (c) Directed Listening (the instructor reads a text aloud and students answer questions and discuss the passage), followed by (d) the generation of student texts based on the previous discussions, using a Language Experience Approach (students dictate to the instructor, who produces the texts), followed by (e) basic reading skills instruction using the student-generated texts, including whole-word phonics, a multi-sensory approach to word recognition (the VAKT method), and reading comprehension instruction. The authors stress the use of listening comprehension instruction followed by basic skills instruction using texts in the content area of interest to adults.

A newer, computer-based program for teaching reading comprehension uses a multiple-components approach that includes comprehension strategy instruction along with vocabulary instruction and word recognition or fluency practice (Gretes & Green, 1994). Intermediate ABE readers using the program, those who scored between GE 4 and 9 on a standardized test of reading comprehension, increased their reading achievement (based on TABE total reading scores, a combined measure of vocabulary and comprehension). This self-paced program presents instruction and practice in several specific comprehension strategies: scanning a text for information, making inferences from information in a text, organizing information, summarizing information, and answering questions about a text. Before beginning the comprehension exercises, however, learners can choose to listen to the text while reading along and also study key vocabulary in the passage. A natural sounding (digitized) voice reads text presented on the computer screen, including the passages that will be used for comprehension instruction, individual words, vocabulary definitions, and instructions for exercises. In this experimental study, the effects of comprehension strategy instruction were not separated from the effects of the vocabulary instruction and what may amount to word recognition and fluency practice using the spoken text.

Results from a non-experimental study suggest that another multiple-components strategy may lead to increased reading comprehension achievement in a special program for out-of-school adolescents. In this

program, developmental strengths and weaknesses in each component of reading are diagnosed in order to focus instruction appropriately (Curtis & Longo, 1997).

Enabling Instruction or Setting

The first two trends in this category may have more to do with the way teachers organize instruction than with a specific strategy.

Trend 19 The degree to which a literacy program is learner-centered may differentially affect students at different ability levels. (Conti, 1985; Fitzgerald & Young, 1997)

In one experimental study, twenty-nine ABE, ESL, and GED teachers completing a survey were found to use a more teacher-centered approach as opposed to a more "traditional" ABE learner-centered approach (Conti, 1985). Results from the study suggest that the degree to which these teachers' classes are learner-centered (or collaborative) affects students differently, depending on their level of reading and math ability (the measure used tested math ability as well as reading ability). Weaker teacher-centered approaches, those that incorporate more learner-centered activities, appear to lead to increased comprehension and math ability among adults who score below about GE 9, and among ESL adults. Stronger teacher-centered approaches appear to be more effective with adult students in GED classrooms (those working on high school level reading tasks).

One non-experimental study may support this result. In an exploratory correlational study based on students in ABE programs in 20 states, a relationship was found between the use of a highly individualized (as opposed to pre-structured and fixed) curriculum and increases in adults' reading comprehension (Fitzgerald & Young, 1997). This may have been mediated by the use of experienced, full-time instructors who typically use a more individualized approach. Individualized approaches might be equated, to some degree at least, with learner-centered approaches.

Trend 20 With adult readers at the intermediate level (reading around GE 6), a meaning-based diagnostic-prescriptive approach to teaching may lead to increased reading comprehension achievement. (Cheek & Lindsey, 1994)

In an experimental study of two contrasting teaching styles, one style was found to be more effective for teaching inferential reading comprehension skills, but not for teaching literal reading comprehension skills. Three measures of reading comprehension were used: the Literal, Inferential, and Total Comprehension subtests of the Stanford Diagnostic Reading Test. Literal comprehension tests measure a learner's ability to recall specific ideas or pieces of information from a text that has been read. Inferential tests measure a learner's ability to draw valid inferences from the ideas or information presented in the text.

The style found to be more effective for teaching inferential reading comprehension used a meaning-based, diagnostic-prescriptive approach. The less effective style used a programmed learning approach. The diagnostic-

prescriptive approach had several important characteristics: formal and informal assessment to identify learner strengths, needs, and interests in reading; use of these assessment results to develop individualized teaching strategies, methods, and materials for word analysis and reading comprehension instruction; and, language-experience and literature-based instruction emphasizing regular student-teacher interaction, real-life reading material, and reading as a meaning-making activity. The programmed learning approach, on the other hand, emphasized placement of students at their current reading levels in computer-based or print-based programs where they could work independently, at their own pace, and in a step-by-step manner toward a specific word analysis or reading comprehension learning objective. There was no significant difference between groups on the literal comprehension measure.

The seventy-one students who participated in this study were each randomly assigned to one of the two approaches. Random assignment, the fact that the groups' initial reading levels were not significantly different, and the fact that both classes were team-taught by the same pair of teachers, rule out many extraneous factors that could have accounted for the results. Therefore, fairly specific questions for future research studies can be asked: Although the researchers attempted to vary only their teaching style or approach, how different were the specific reading comprehension teaching strategies in each group (especially given that one emphasized "meaning-centered instruction" while the other focused more on "word identification")? What were the separate effects of the diagnostic-prescriptive and the meaning-based aspects of the more successful approach to teaching inferential reading comprehension?

Trend 21 Requiring adults to attend a literacy program in order to receive welfare benefits may not increase reading comprehension achievement. (Boudett & Friedlander, 1997 and Friedlander & Martinson, 1996)

This result comes from a study of five large programs in a metropolitan area (Boudett & Friedlander, 1997, and Friedlander & Martinson, 1996). In this study, the reading comprehension gains of adults required to attend ABE programs in order to receive welfare benefits were compared to the gains of those who received benefits without this requirement (attendance in a program was optional). Those required to take ABE (including GED or ESL) classes did attend these classes more often. Roughly one-third did, a much higher percentage than those in the other group. However, those required to attend did not have a greater increase in reading comprehension achievement than those who were not required to attend, even when considering only those who actually participated in an adult education program.

Trend 22 In programs where a teacher has assistance in the classroom, students may make greater gains in reading comprehension achievement. (Brooks, Davies, Ducke, Hutchison, Kendal, & Wilkin, 2001)

An experimental study of 71 programs in Britain found that, when the main teacher in a classroom has assistance from either volunteers or paid assistants, reading comprehension achievement is significantly greater than in classrooms where no assistance is available (Brooks, Davies, Ducke, Hutchison, Kendal, & Wilkin, 2001).

Trend 23 Dealing briefly but explicitly with issues related to reading self-efficacy and motivation among adult learners in a literacy class may lead to increased reading comprehension achievement. (Mikulecky & Lloyd, 1997)

Results from a study of instructional strategies used in workplace literacy settings with adult learners who are not beginning readers (roughly GE 6 or higher) suggests that dealing briefly but explicitly, as opposed to incidentally, with issues related to reading self-efficacy and motivation leads to increased reading comprehension achievement.

Instructional Materials

Question

Does the use of specific instructional material lead to increased reading comprehension achievement?

Trend 24 Integrating adult-oriented, contextually relevant material into literacy programs may lead to increased reading achievement. (Aderman, 1987; Curtis & Chmelka, 1994; McDonald, 1997; Mikulecky & Lloyd, 1997; Sticht, Armstrong, Hickey, & Caylor, 1987, and Sticht, 1989, 1997)

In workplace literacy programs with high rates of retention and students reading at about GE 6 or higher, the use of workplace-oriented material at least 20 - 30% of the time during classroom instruction appears to increase reading comprehension of work-related material (Mikulecky & Lloyd, 1997). This is supported by the non-experimental results from another study (McDonald, 1997) in which the integration of job-oriented tasks and material with language instruction in an ESL vocational class leads to a greater increase in general reading comprehension (measured by the ABLE) than non-integrated approaches. In addition, one frequently cited study (not published in a peer-reviewed journal) also finds that work-related literacy programs using job-specific content during instruction appear to increase job-specific reading comprehension achievement. It may also increase non-job-specific reading comprehension achievement (as measured by tests that do not use job-specific comprehension passages, for example) (Sticht et al., 1987, and Sticht, 1989, 1997).

One more non-experimental study supports the use of material that is relevant to adults. In this study, modifying a popular adult literacy phonics and sight word instructional program (Laubach) so that it includes practice with more challenging, adult-oriented words incorporating the letter-sound correspondences being taught appears to lead to a faster rate of growth in reading comprehension (Curtis & Chmelka, 1994). Although the use of adult-oriented content may be more motivating and relevant for adults, its effectiveness in this program is attributed to its complexity. In programs teaching word recognition, adults may rely on their sight word knowledge to read simpler words instead of applying word analysis strategies, such as sounding out. Using more complex words during instruction, words that are not a part of an adult's sight word knowledge, means that these words will need to be sounded out, which requires the application, and therefore practice, of letter-sound knowledge.

Finally, results from a descriptive study suggest that re-writing information in a nutrition pamphlet using ABE students' language results in increased recall for beginning level readers compared with a standard version of the pamphlet (Aderman, 1987). This was true for the four students in this study even though the readability levels of the passages were the same.

Intensity and Duration of Instruction

Question

Does more intense literacy instruction, or instruction that is of longer duration, increase reading comprehension achievement?

Ideally, to judge to what degree the intensity or duration of instruction leads to gains in reading comprehension, learners would be assigned to groups that varied in either the intensity of instruction or the length of time they received instruction. Practically, this is a difficult criterion to meet, and the studies reported here have used intact or existing groups, comparing, for example, those who have participated for a certain length of time in an ABE program with those who have not. Selection bias, therefore, cannot be ruled out. Those who stay for a short period of time in a program may share an important characteristic, such as initial level of reading ability, that those who stay for a longer period of time do not share.

Trend 25 Spending at least 70% of classroom time practicing reading and writing, including the occasional but direct or deliberate discussion of reading strategies, may increase learners' meta-comprehension abilities. (Boudett & Friedlander, 1997 and Friedlander, & Martinson, 1996; Mikulecky & Lloyd, 1997)

Only one experimental study has looked at the effects of intensity of instruction on reading comprehension (Mikulecky & Lloyd, 1997). Results from the study suggest that, up to a point, more intense instruction leads to increases in reading metacomprehension ability. Spending 70% or more of classroom time on literacy practice (reading and writing) leads to an increase in reading metacomprehension abilities, or the ability to deliberately use strategies such as skimming, reading more carefully or monitoring, using headings, and focusing on topics. Classes in the programs studied typically lasted for about one and one-half hours and total class time per week ranged from two to five hours.

Results from a non-experimental study suggest that increasing the intensity of instruction by simply increasing the total number of classroom hours per week does not have a positive effect on reading comprehension. Class time of nine or more hours per week was associated with declines in reading achievement (reported in Boudett & Friedlander, 1997 and Friedlander & Martinson, 1996).

Trend 26 Reading comprehension achievement may increase as a learner stays longer in a literacy program, although progress may be extremely variable over time. (Brooks, Davies, Ducke, Hutchison, Kendal, & Wilkin, 2001; Boudett & Friedlander 1997 and Friedlander & Martinson, 1996; Fitzgerald & Young, 1997; Gretes & Green, 1994; Penn & Greenberg, 1993; Phillber, Spillman, & King, 1996)

Studies comparing groups of learners receiving a different number of hours of instruction in reading have mixed results regarding reading comprehension achievement. Overall, the results slightly favor programs that last longer over those that are shorter (one experimental and two non-experimental results were positive while one experimental result and one non-experimental were not).

The results from one experimental study (Philliber, Spillman, & King, 1996) suggest that staying in a literacy program longer increases reading achievement. The Philliber et al. finding, based on a combined comprehension and vocabulary GE gain score, found that 51 or more hours of attendance were needed to produce significantly greater gains. The larger, non-experimental study by Brooks et al., based on a national evaluation of literacy programs in Britain, also reports that those who attended for more than 50 hours benefited most (these were also the students who attended regularly). In the other experimental study, adults who completed more than a single lesson in a computer-based reading comprehension program had greater gains on a measure of comprehension achievement, although there was no difference between those completing 2 to 3 lessons and those completing 4 to 6 (Gretes & Green, 1994).

Results from another experimental study (Perin & Greenberg, 1993) are mixed. Length of stay affected achievement on one measure of reading comprehension (teacher ratings) but not on another (reading tests). Results from non-experimental studies are also mixed. Two correlational studies, both involving large numbers of ABE learners, produced seemingly contradictory results. One found a positive relationship between the number of hours in an ABE program and reading comprehension achievement (Fitzgerald & Young, 1997). The other study found that number of hours was positively associated with gains only for ESL students, and that this effect was very small (Boudett & Friedlander, 1997, and Friedlander & Martinson, 1996).

Teacher Preparation

Question

Does teacher preparation lead to increases in learner reading comprehension achievement?

Trend 27 Staff with more experience or training may have a better chance at improving reading comprehension achievement. (Brooks, Davies, Ducke, Hutchison, Kendal, & Wilkin, 2001; Fitzgerald & Young 1997)

Although several studies mention teacher preparation, only two studies were found that addressed it directly, one non-experimental and one experimental. An exploratory path analysis of ABE program data from twenty states found that the degree of staff teaching experience is positively associated with reading comprehension achievement (Fitzgerald & Young 1997). A national study of basic skills programs in Britain (Brooks, Davies, Ducke, Hutchison, Kendal, & Wilkin, 2001) found that for those programs in which all teachers are qualified (with certification or a Bachelor's degree in education), students make significantly greater gains in reading comprehension.

Learner Characteristics

Of the four learner characteristic factors, a trend was found only for motivation.

Reading Level

Question

Are certain forms of reading comprehension instruction more effective for students reading at a particular reading level (for beginning versus more advanced readers, for example)?

No trends related to reading level were identified. Although research studies describe approaches to reading comprehension instruction that are used with ABE students at different levels of ability, very few compare the use of one approach across ability levels. Overall, even the weak evidence that exists is mixed. Two correlational studies arrive at contradictory conclusions. One finds that a learner's initial level of reading ability has the most influence on reading achievement (Fitzgerald & Young, 1997), while the other finds no strong relationship between ABE program participants' reading achievement and their initial reading level (Boudett & Friedlander, 1997, and Friedlander & Martinson, 1996). Another study finds that teaching style is an important factor in GED versus pre-GED learners' achievement, but uses a measure that includes math as well as reading (Conti 1985). One experimental study finds no difference in achievement based on reading level for those completing a computer-based reading comprehension program (Gretes & Green, 1994).

ESOL

Question

Are certain forms of reading comprehension instruction more effective for ABE students with different levels of language ability, particularly ESL ABE students?

Only one comprehension study was found that dealt with ABE students in ESOL classes, and so no trends were identified. McDonald's non-experimental results suggest that the use of job-oriented tasks and content with ESL students in a vocational class is effective in increasing their general functional reading ability (measured with the ABLE) (McDonald, 1997). It is not clear how students in the comparison groups varied in language ability.

Motivation

Question

Does instruction that improves ABE students' motivation or self-esteem also lead to increased reading comprehension ability?

Trend 28 The direct or deliberate discussion of learners' literacy beliefs and plans in order to deal with issues of reading self-efficacy and motivation may increase reading comprehension achievement. (Boudett & Friedlander, 1997 and Friedlander & Martinson, 1996; Mikulecky & Lloyd, 1997)

Most ABE programs assume that adult learners' motivation and feelings of self-efficacy are important issues. However, very few studies investigate whether or not attempting to improve motivation and feelings of self-efficacy will have a positive affect on adult learners' reading ability. Mikulecky and Lloyd (1997) describe workplace literacy programs in which learners' feelings of literacy self-efficacy, or how good they perceive their reading and writing to be, and how important reading and education are in their future plans, is evaluated and then dealt with briefly, but directly, during classroom literacy instruction. Learners in their study who participated in these classroom discussions had much greater gains in their ability to comprehend workplace related texts than those who did not.

Another study (reported in Boudett & Friedlander, 1997, and Friedlander & Martinson, 1996) attempted to increase ABE students' motivation by requiring attendance in an ABE program to receive welfare benefits. However, even though those required to attend did attend more often, they did not have a greater increase in reading comprehension achievement than those who did not.

Ideas for Reading Comprehension Instruction from K-12 Research

ABE reading comprehension assessment research indicates that adults who qualify for ABE services have poor functional literacy comprehension and that their knowledge about reading comprehension (their meta-comprehension) may be similar to that of children who are beginning readers. This suggests that ABE reading comprehension instruction should provide ways to help adults understand what they already do as they read for meaning, and what alternative strategies are available.

The strongest result from research related to reading comprehension instruction is that participation in ABE programs may lead to increases in ABE learners' reading comprehension achievement. Results related to other topics and subtopics are not as strong because fewer studies have addressed them. However, several trends do emerge from the research.

Principles and trends in the ABE reading comprehension research suggest that it is important for adults to spend time actually practicing reading and discussing reading strategies. They also stress that the learning

situation or context is important for ABE reading comprehension instruction, and that it is important for adults to deal briefly but directly with the issues of motivation and self-efficacy as they work on their reading.

While the NRP results do not directly support these trends, they do not contradict them either and might be seen as complementary. Although the NRP analysis of text comprehension research does not address topics and subtopics related to goals and setting, instruction material, intensity and duration of instruction, ESOL classrooms, learning disability, and motivation, it does present a considerable body of research related to specific approaches to reading comprehension instruction that may provide some guidance for ABE educators. Unlike the ABE research, with its mixed results related to the effects of specific strategies for reading comprehension instruction in ABE programs, research at the K-12 level finds very strong evidence to support teaching several specific reading comprehension strategies.

Instructional Methods and Material

In addition to describing specific strategies that may be taught, the NRP review of research at the K-12 level also describes research related to teacher preparation and how it affects growth in student reading comprehension. The NRP review does not present research directly related to the ABE subtopics having to do with materials and the intensity or duration of instruction. Results from the NRP review of other aspects of instruction (alphabetics, fluency, and vocabulary) also suggest ways in which reading comprehension may be improved. In what follows, the first idea presented deals with these results.

Teaching Strategies

Idea 18 To improve ABE learners' reading comprehension, use a multiple-components approach to instruction in which all aspects of the reading process are addressed, as needed, including phonemic awareness, word analysis, and vocabulary as well as reading comprehension.

K-12 Research. The NRP review found that reading comprehension achievement can be improved indirectly by teaching skills that enable comprehension. Teaching phonemic awareness to beginning readers leads to improved reading comprehension (pp. 2-4, 2-5). Small-group instruction is especially effective (pp. 2-4, 2-5, 2-20). PA training is also effective in improving comprehension for disabled readers at higher reading levels (through at least GE 6) (p. 2-94). Systematic, as opposed to non-systematic, phonics instruction improves reading comprehension for beginning readers (p.2-94), and for older readers with a reading disability (p. 2-116). Teaching fluency using repeated and guided oral reading leads to increases in reading comprehension (p. 3-3). Finally, pre-teaching important vocabulary words before reading can also improve reading comprehension (p. 4-4).

Idea 19 To improve ABE learners' comprehension of texts used during instruction (those ABE learners reading above Grade Equivalent 3), teach them a strategy that can be used during the reading process and that enables them to become actively engaged in understanding a text. Eight effective strategies have been identified: comprehension monitoring, cooperative learning, graphic organizers, story structure, question

answering, question generation, summarization, and multiple strategies (using a combination of strategies when appropriate).

K-12 Research. The NRP identifies 16 categories of instruction and finds that eight appear to have "a firm scientific basis for concluding that they improve comprehension of normal readers" (p. 4-42). These eight include seven specific strategies and a multiple-strategy approach. All of these strategies appear to improve students' comprehension of texts they read in the classroom while practicing comprehension, as measured on tests of recall, question answering, question generation, and summarizing (p. 4-6). It should be noted that the NRP research reviewed involved students in grades 3 and up, not those in the lower grades.

The eight kinds of instruction that appear to be effective and most promising for classroom instruction are (p. 4-6):

1. Comprehension monitoring in which the reader learns how to be aware or conscious of his or her understanding during reading and learns procedures to deal with problems in understanding as they arise.
2. Cooperative learning in which readers work together to learn strategies in the context of reading.
3. Graphic and semantic organizers that allow the reader to represent graphically (write or draw) the meanings and relationships of the ideas that underlie the words in the text.
4. Story structure from which the reader learns to ask and answer who, what, where, when, and why questions about the plot and, in some cases, maps out the time line, characters, and events in stories.
5. Question answering in which the reader answers questions posed by the teacher and is given feedback on the correctness of their answers.
6. Question generation in which the reader asks himself or herself what, when, where, why, what will happen, how, and who questions.
7. Summarization in which the reader attempts to identify and write the main or most important ideas that integrate or unite the other ideas or meanings of the text into a coherent whole.
8. Multiple-strategy teaching in which the reader uses several of the procedures in interaction with the teacher over the text. Multiple-strategy teaching is effective when the procedures are used flexibly and appropriately by the reader or the teacher in naturalistic contexts.

Idea 20 To improve ABE learners' general reading comprehension achievement (those ABE learners reading above Grade Equivalent 3), teach them to use a repertoire of several strategies that they can use consciously and flexibly as needed while reading and that enable them to become actively engaged in understanding a text. Combinations of the following strategies are suggested by the research: comprehension monitoring, cooperative learning, graphic organizers, story structure, question answering, question generation, and summarization.

K-12 Research. Based on studies of students in grades 3 and up, several specific strategies (comprehension monitoring, cooperative learning, graphic organizers, story structure, question answering, question generation, and summarization) appear to improve students' comprehension of texts they read in the classroom while

practicing comprehension, as measured by non-standardized, researcher-made tests of recall, question answering, question generation, and summarizing (p. 4-6). Teaching the use of more than one strategy for reading comprehension can lead to increases on standardized measures of reading comprehension, or general reading comprehension achievement that is not tied to the specific texts used during instruction (pp. 4-6, 4-47). This suggests that teaching a multiple-strategy approach to comprehension generalizes to reading outside the classroom for children. This is an especially important goal for adult literacy programs.

Teacher Preparation

One note of caution raised in the NRP report (p. 4-49) that may be relevant for ABE settings, where teachers may be volunteers, paraprofessionals, or otherwise lack training, is:

> In spite of heavy emphasis on modeling and metacognitive instruction, even very good teachers may have trouble implementing, and may even omit, crucial aspects of strategic reasoning. The research suggests that, when partially implemented, students of strategy teachers will still improve. But it is not easy for teachers or readers to develop readers' conceptions about what it means to be strategic. It takes time and ongoing monitoring of success to evolve readers into becoming good strategy users.

Comment 7 To improve ABE learners' general reading comprehension achievement, train their teachers to teach the awareness and use of multiple strategies for reading and understanding a text.

K-12 Research. Unlike the NRP review of other aspects of reading instruction (alpabetics, fluency, and vocabulary), the review of reading comprehension instruction did locate and present several studies having to do with the preparation of teachers for reading comprehension instruction. Although these four studies represent a relatively small body of research when compared with other areas reviewed by the NRP, several trends were observed. The most important trend is that teachers can be taught to teach reading comprehension to students and, when they are, their students become aware of comprehension strategies, use the strategies, and improve their reading (p. 4-8).

Comment 8 To improve ABE teachers' knowledge of reading comprehension instruction, use both preservice and inservice training, and to improve their students' reading comprehension achievement directly, use inservice training.

K-12 Research. Correlational and experimental studies were also reviewed to examine the effects of pre-service and in-service teacher education. Preservice education typically occurs before teachers are certified, while inservice education typically involves professional development opportunities that occur after a teacher has begun teaching (p. 5-4). Trends from this research suggest that: (1) teachers learn the reading instruction strategies and techniques that they are taught during preservice education (p. 5-1), and (2) inservice education appears to lead to improved teacher knowledge and improved reading achievement for the teachers' students.

Learner Characteristics

Functional Reading Level

The NRP review presents just a few results related to learner characteristics, all having to do with students' reading levels. The studies reviewed included children in, roughly, grades three through six (pp. 4-42 – 4-46). The question generation and multiple strategies instruction studies included those at higher grade levels (up to GE 9 and 11, respectively).

Idea 21 For intermediate adult readers (Grade Equivalents 3-6), improve comprehension of narrative texts by teaching story structure, or the typical content and organization of stories.

K-6 Research. The NRP review found that poor readers (in grades 3 – 6) benefited more from instruction in story structure than good readers (p. 4-46).

Idea 22 To improve the general reading comprehension achievement of adult intermediate and advanced readers, teach the flexible use of multiple reading comprehension strategies.

K-6 Research. The NRP review found that good readers and students in the 7th grade or higher benefited most from multiple strategy instruction (p. 4-46).

Computer Technology and ABE Reading Instruction

Definition

In other sections of this report, computer-assisted instruction (CAI) is discussed within the Instructional Methods and Material category, under Instructional Material. Computer technology is also treated separately, in this section of the report, because of the exceptional promise that many feel technology has for improving the reading of ABE learners (e.g., U.S. Congress Office of Technology Assessment, 1993).

Computer applications used for instruction can be divided roughly into two categories: supplementary and stand-alone. Supplementary applications are used along with some other form of teacher-based instruction while stand-along applications are used by students with minimal input from a classroom teacher. How is technology used for reading instruction? For the National Reading Panel, this question was answered for K-12 reading instruction by looking at qualifying research studies to determine the ways in which the application of computers to reading instruction occurs.

> A total of 21 studies was found, representing experimental manipulations of problems across the entire spectrum of reading instruction. As a first step to further analysis, the problems addressed by these studies were categorized. The largest group of studies (six) included those that studied the addition of speech to computer-presented text. There were two studies that examined the effects of vocabulary instruction, two more that looked at word recognition instruction, and two that investigated comprehension instruction, broadly defined. One study examined spelling, and two studies examined the effects of broad programs on learning to read. These last studies looked at the delivery of reading instruction by comprehensive software that covered many, if not most, elements of reading instruction. (NRP, 2000b, pp. 6-1 – 6-2)

Rationale

A rationale for the use of computer technology to teach reading is also provided by the NRP:

> Until recently, computers did not have all (or even most) of the capabilities that were needed to implement a complete program of reading instruction. A primary lack among these capabilities was the inability to comprehend oral reading and judge its accuracy. Another lack was the inability of computers to accept free-form responses to comprehension questions, leading to reliance solely on recognition tests such as multiple-choice formats. The situation is currently very different, with most new computers capable of speech recognition, as well as a host of multimedia presentation capabilities. Artificial intelligence is beginning to make inroads into software for instruction, and systems for text comprehension are fairly sophisticated, even on home computers.

> The development of the Internet and the linking of schools and school computers to it have combined to provide a new interest in computer usage. The kinds of information resources available have provided a stimulus for renewed efforts to deliver instruction of all sorts, including reading, by computer. Coupled with the facts that computers have become much more capable and software has become much more advanced, interest in using the Internet has led to a dramatic new wave of interest in using computers in reading instruction. (p. 6-1)

Computer Technology and ABE Reading Instruction: Principles and Trends

Overall

Question

Does the use of computer-assisted instruction (CAI) in ABE programs increase learners' reading achievement?

Principle 17 In general, computer assisted instruction (CAI) is at least as effective as non-CAI in increasing reading achievement. (Alessi, 1982; Gretes & Green, 1994; Maclay & Askov, 1988; McKane & Greene, 1996; Rachal, 1995)

A descriptive meta-analysis of computer-assisted instruction (CAI) research finds that CAI appears to be as good as traditional ABE instruction at the secondary level, and as good as or better than traditional ABE instruction at the pre-secondary level (Rachal, 1995). These findings were based on an analysis of twenty-one studies that compared the use of CAI for ABE reading instruction with non-CAI approaches. Of the twenty-one studies examined, seven were found to have major methodological flaws (for example, group sizes or tests of statistical significance were not reported). In addition, two of the studies measured language achievement as opposed to reading achievement. The remaining twelve studies yielded sixteen results, or sixteen comparisons between experimental (CAI) and control (non-CAI) groups on measures of reading achievement (two studies had three results, and the rest had one result each). The remaining discussion of the Rachal meta-analysis refers only to these twelve studies and sixteen results.

Five of the experimental results from these studies favored the CAI groups, twelve found no difference between CAI and non-CAI groups, and one favored a non-CAI group. These overall results may be considered positive for two reasons: (a) CAI appears to be at least as good as traditional ABE instruction (only one result favored a non-CAI group), and (b) if these CAI approaches to reading instruction are like CAI programs generally, they may be more efficient, taking less time to accomplish the same results as traditional approaches (Kulik, Kulik & Schwalb, 1986; Kulik & Kulik, 1991; Kulik, 1994).

Only one of the twelve studies from the Rachal meta-analysis discussed above was from a peer-reviewed journal (Diem & Fairweather, 1980). However, four additional experimental studies, not included in the Rachal analysis, were located in peer reviewed journals (Alessi, 1982; Gretes & Green, 1994; Maclay & Askov, 1988;

McKane & Greene, 1996). These studies all found positive effects for CAI and thus support the general conclusions drawn from the Rachal analysis.

Instructional Focus

Question

Does the use of computer-assisted instruction (CAI) in ABE programs increase learners' achievement in specific aspects of reading (alphabetics, fluency, vocabulary, or comprehension)?

Principle 18 The use of CAI may lead to increased reading comprehension achievement. (Alessi, 1982; Gretes & Green, 1994; McKane & Greene, 1996; Rachal, 1995)

In the twelve experimental studies used in the Rachal meta-analysis, reading comprehension achievement is the measure used most often. In some cases, it includes combined vocabulary and comprehension measures. In studies where it is clear that reading comprehension is measured (combined with vocabulary in some instances), there were two positive results in favor of CAI instruction and six neutral results that found no difference between CAI and non-CAI instruction. CAI seems to be at least as effective as non-CAI instruction for reading comprehension instruction.

This finding is supported by results from two experimental studies not included in Rachal's analysis (Alessi, 1982; McKane & Greene, 1996). In one, CAI is used to provide practice in word analysis skills and fluency at the letter, syllable, word, phrase, sentence, and paragraph level (McKane & Greene, 1996). This practice leads to an increase in reading comprehension achievement (non-equal-interval GE scores may have been used in this analysis). The computer is used to assess and monitor students' word analysis ability, deciding when mastery is achieved and which skills a student needs to work on. In addition, the computer program measures rate to within tenths of a second in order to monitor fluency.

In the other study (Alessi, 1982), the computer is also used to assess and monitor student progress. Students are taught two comprehension skills, locating information in a text and paraphrasing information. In addition to monitoring student progress, the computer was used to insure mastery of simpler tasks before moving on to more complex ones, to provide corrective feedback, and to provide graphic cues to students (for example, the use of underlining, text boxes, and arrows). Instruction led to improved performance on the two comprehension skills taught: locating information and paraphrasing information.

A newer, interactive CD for teaching reading comprehension to adults uses a multiple-components approach that includes comprehension strategy instruction along with vocabulary instruction and word recognition or fluency practice (Gretes & Green, 1994). This self-paced program includes direct instruction and practice in several specific comprehension strategies (scanning, making inferences, organizing, summarizing, and question-answering) along with direct vocabulary instruction and fluency and word recognition practice using a digitized voice (a natural sounding computer-controlled voice) that allows users to listen to text while reading it.

Trend 29 The use of CAI may lead to increased word recognition achievement. (Rachal, 1995; Maclay & Askov, 1996)

In studies from the Rachal meta-analysis where it is clear that word recognition is measured, two out of the three results are positive (favoring the CAI group) and the third finds no difference between the CAI and non-CAI groups. All three of these studies involve adults at the pre-secondary level. These results suggest that CAI instruction may increase word analysis ability as well as reading comprehension ability at the pre-secondary level. A study not included in the Rachal analysis also finds positive results for computer-assisted word recognition instruction. In this study the computer is also used to assess and monitor student progress (Maclay & Askov, 1988). Students are taught to recognize high frequency words using pictures and verbal descriptions (through speech synthesis). A significant increase in word recognition achievement was found, compared to a group of students that received no instruction.

Instructional Goals

Trend 30 CAI may be effective for reading instruction in general functional literacy settings. (Gretes & Green, 1994; Rachal, 1995)

All of the studies except one in Rachal's meta-analysis evaluate the use of CAI for reading instruction in general functional literacy programs as opposed to workplace or family literacy programs. The one exception takes place in a workplace setting. In addition, an experimental study of a computer-based reading comprehension program, not included in the Rachal meta-analysis, focuses on instruction with functional texts dealing with consumer, health, and civics issues (Gretes & Green, 1994).

Trend 31 CAI may be effective for reading instruction in family literacy settings. (Maclay & Askov, 1988)

Experimental results from a study of CAI instruction that is not included in Rachal's analysis suggests that it is also possible to use CAI to increase word analysis ability within a family literacy setting (Maclay & Askov, 1988). Beginning adult readers (reading below GE 5) in this program increased their word recognition accuracy using a computer software program that taught 1,000 high frequency and functional words.

Instructional Methods and Material

No trends related to instructional methods and material were drawn from the research. Computer assisted instruction uses computer instruction along with some other form of instruction. It may, for example, be used to supplement traditional instruction, or it may be used along with special print-based material. It is sometimes distinguished from computer-based instruction, which uses only computer-based material. Many of the studies reviewed by Rachal use computers along with traditional forms of instruction and print-based material. A few are primarily computer-based, however, including larger, stand-alone systems that contain a complete curriculum.

Functional Reading Level

Trend 32 CAI may be most effective for adults reading at the pre-secondary level. (Alessi, 1982; Gretes & Green, 1994; Maclay & Askov, 1988; McKane & Greene, 1996; Rachal, 1995)

Only one study was found that directly compares CAI's effectiveness for those at different levels of reading ability (Gretes & Green, 1994). Results from this experimental study suggest that a computer-based program for comprehension instruction is just as effective for adults reading below GE 6 (with GE scores ranging from 4 – 6) as it is for those reading above (from GE 6.1 – 9).

Although Rachal's analysis cannot compare those at different reading levels directly, it does break CAI studies into two groups based on the reading level of the adult participants: pre-secondary level and secondary level studies. For pre-secondary ABE students, five results favored CAI, six found no difference, and one favored a non-CAI group. For secondary-level ABE students, all five results found no difference between the groups. This overall result suggests that CAI in reading may be more effective with adults reading at the pre-secondary level. Results from three additional studies with adults at the pre-secondary level also provide indirect (non-experimental) support for this trend (Alessi, 1982; Maclay & Askov, 1988; McKane & Greene, 1996), although none compared effects for pre-secondary and secondary students.

Ideas for Computer Technology Instruction from K-12 Research

Trends from the ABE research suggest that computer-assisted instruction may be as effective as non-computer instruction for increasing reading comprehension, that it may be effective in ABE settings (functional and workplace literacy contexts), and that it may be more effective with adults reading at the pre-secondary level. Trends derived from the relatively small set of K-12 studies reviewed by the NRP provide some support for the ABE trends.

Comment 9 It is possible to use computer technology effectively for reading instruction.

K-12 Research. Although the NRP (p. 6-2) found that, "It is extremely difficult to make specific instructional conclusions based on the small sample of experimental research available," it also stated that, "...it is possible to use computer technology for reading instruction. All the studies in the analysis report positive results."

Comment 10 Speech synthesis may be an effective component of computer-assisted instruction.

K-12 Research. Six of the 21 studies examined by the NRP found that adding speech to the print material presented on computers was an effective CAI practice for reading instruction.

Conclusion: Summary of Results and A Research Agenda

The work of the Reading Research Working Group (RRWG) provides a framework for beginning to address three critical questions:

- What does the research say about ABE reading instruction?
- What are the strengths and weaknesses in the ABE reading instruction research base?
- What research is needed in order to provide the best possible tools for teaching reading to adults in ABE settings, including adults in ASE (adult secondary education) and ESOL programs?

The RRWG identified topic areas that are most important for adult reading instruction. Research is needed in each of these areas before a complete set of evidence-based practices can be recommended to those responsible for teaching reading to adults. In what follows, the distribution of research studies across the topic areas will be presented. This is a simple, straightforward way to see which topics have been the focus of research and which have not. In addition, significant results from the summary of research studies presented in previous sections of this report will be reviewed. These results should also be useful in providing direction for future research. Finally, research results from studies of reading instruction at the K-12 level that can provide suggestions for research in ABE will be presented.

Topics Selected

The main topic areas identified by the RRWG represent the major aspects of reading instruction: assessment of reading ability, alphabetics instruction (phonemic awareness and word analysis), fluency instruction, and vocabulary and comprehension instruction. Assessment is one of the first tasks completed by reading teachers. Those involved in ABE reading instruction, whether they are teaching, creating models for instruction, or publishing materials that are used for instruction, need to have knowledge of ABE students' strengths and needs in reading in order to ensure the most effective instruction possible. We can use reading assessment tools to help to identify strengths and needs in each individual aspect of the reading process (alphabetics, fluency, vocabulary, and comprehension). An assessment instrument may also measure more than one aspect of reading at a time, such as a test that includes both vocabulary and comprehension questions. Because instruction should involve all aspects of the reading process, some assessment techniques, such as assessment profiles, provide information about students' relative strengths and needs in several facets of reading.

Most assessment research is used to describe ABE learners' reading abilities and the specific abilities of subgroups in the ABE population including students with learning disabilities (LD) and students in ESOL programs (English for speakers of other languages). However, some assessment research is also concerned with the nature or quality of the assessment procedures or tests themselves, answering questions such as, "How effective or how valid are common ABE assessment instruments?"

Within each of the main topic areas, the RRWG identified several subtopics common to most: subtopics related to the goals or settings associated with reading instruction, those related to instructional methods and material, and those related to learner characteristics. The following table lists these subtopics and shows how they are related to the major components. Although additional categories or topics that are important to ABE reading instruction may be identified in the future, research is definitely needed in each of the subtopics identified so far by the RRWG (those areas shown in the shaded parts of the table).

SUBTOPICS WITH RESEARCH-BASED PRINCIPLES(P) OR TRENDS (T)

MAJOR COMPONENTS OF INSTRUCTION

Subtopics	Assessment Profiles	Alphabetics PA	Alphabetics WA	Fluency	Vocab	Comp	Tech
Assessment of Component							
All adults	P	P	P	P	T	P	
Adults with LD	(P)	T				P	
ESOL Adults	(P)					P	
Instruction							
Overall		T	P	P		P	P
Goals and Setting					T	T	T
General literacy		T	P	P	T	T	
Workplace literacy			T				
Family literacy			T			T	
Instructional Methods and Material							
Teaching strategies			P	P	T	P	
Instructional materials						T	
Intensity and duration					T	T	
Teacher preparation						T	
Learner Characteristics							T
Functional reading level							
ESOL							
Learning Disability							
Motivation						T	

P=Principle, T=Trend, PA=Phonemic Awareness, WA=Word Analysis, Vocab=Vocabulary, Comp=Comprehension, Tech=Computer Technology, LD=Learning Disabilities, ESOL=English for Speakers of Other Languages

Initial Findings: The Number and Distribution of Studies Across Topic Areas

For this review, research studies were located through a literature search and evaluated using criteria derived and modified somewhat from the "evidence-based methodological standards" developed by the NRP in its review of K-12 reading research (NRP, 2000b). The RRWG made several modifications to the approach used by the NRP. Important modifications included the addition of topics especially important to adult reading professionals, the inclusion of studies related to the assessment of reading ability, and the inclusion of non-experimental studies as well as those involving the use of control groups. Qualifying studies were placed into one or more of the topics areas described above and summarized as ***principles*** or ***trends***. Because of the relatively small size of the research base and the small number of studies associated with most topic areas, the principles and trends were labeled "emerging principles and trends." With some exceptions, emerging principles are based on at least two experimental studies and any number of non-experimental studies while trends are based on at least one experimental study and any number of non-experimental studies.

One way to look at the distribution of research studies across topic areas is to note which topics are associated with emerging principles and trends derived from the research. Overall, there are eighteen assessment subtopics. In the table, these are represented by the cells in the first three shaded rows. The remaining 69 subtopics are associated with instruction. Cells in the table containing the letter P indicate subtopics that have enough qualifying research to have generated at least one emerging principle and perhaps some trends. Subtopics with the letter T have only enough research to have generated one or more trends.

Assessment Studies

There are enough research studies in over one-half of the assessment subtopics to have generated at least one emerging principle or trend per subtopic. Nine assessment subtopics have at least one emerging principle and two have at least one trend. The same principle covers all three subtopics under assessment profiles, or assessments that measure ABE students' reading ability in several or all of the major components (phonemic awareness, word analysis, fluency, vocabulary, and comprehension). The principles related to the assessment of ABE students' phonemic awareness are very strong. There are also principles related to the assessment of word analysis, fluency, and comprehension. The fluency and comprehension assessment principles are also fairly strong, based on results from studies with large, representative samples of adult learners, the NAEP fluency surveys and the NALS comprehension surveys. Results from the NALS also provide the only principles associated with the assessment of LD and ESOL adults' reading comprehension abilities, identifying the approximate proportions of adults in these categories with comprehension difficulties.

Assessment subtopics for which there are only trends include the assessment of LD students' phonemic awareness and the vocabulary ability of ABE adults generally. There were no studies, and therefore no principles

or trends, that fit into the ESOL PA (phonemic awareness) assessment category. Nor were there studies in the ESOL and LD (learning disability) categories for word analysis, fluency, and vocabulary assessment. ESOL and LD students form a large proportion of the ABE population. Our lack of knowledge about their basic reading abilities, outside of the PA and assessment profiles subtopics, is surprising.

Instruction Studies

Of the 72 subtopics related to instruction, only nine are associated with emerging principles and 16 with trends. Of the nine principles, there are four in the broad "overall" category (for WA, comprehension, and computer technology), two in the broad "general literacy" category (for WA and fluency), and three in the teaching strategies category (for WA, fluency, and comprehension). Almost all of the subtopics associated with goals and setting and instructional methods and material in the comprehension component have either principles or trends. Fluency and WA subtopics have the greatest number of cells with principles from the instruction research (three each), while PA and vocabulary subtopics have only trends. There is very little qualifying research and consequently very few trends in the subtopics concern learner characteristics. Surprisingly, the effects on instructional outcomes of adults' reading level, language ability, and motivation, and whether or not they have a learning disability, are not addressed much by the research. With the exception of teaching strategies, the same is true for the instructional methods and material subtopics, other than those associated with reading comprehension.

Additional Findings and Recommendations for Research

The recommendations for ABE reading instruction research presented next are drawn from (a) the review of the distribution of studies across topics just presented, (b) a summary of findings from the ABE research presented in earlier sections of this report, and (c) a summary of results from the K-12 reading instruction research, also presented earlier. The distribution of studies shows which topics have been addressed by the research and which have not. Results from existing ABE reading instruction research show how well key questions and hypotheses important to ABE have been addressed and may also suggest new hypotheses to test. Strong results from the K-12 research show what is known about reading instruction for children and suggest approaches that might be tested with adults. All of this information can be used to provide direction for future ABE reading instruction research.

Directions Suggested by Gaps in the Research

Important topics and subtopics for ABE reading instruction were identified ***a priori*** by the Reading Research Working Group. As ABE reading instruction studies were identified, they were classified according to these

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categories. Because experts identified the topics before the studies were analyzed, the distribution of studies across the topic areas can help suggest where research is needed. All of the categories are important to ABE reading instruction and therefore any of these areas that have not been studied experimentally deserve attention.

Learner Characteristics

Many of the subtopic areas related to the characteristics of ABE learners have very little or no research. Certainly, from the above summary of the distribution of studies across topic areas, it is clear that research related to the assessment and instruction of adults with learning disabilities and of adults in ESOL programs is needed. Both of these groups are served in ABE programs and it is important to determine what their needs are and how these needs can be met through instruction. The same can be said of adults at different levels of reading ability. ABE instructors need research-based guidance on how ABE readers at different levels will react to various approaches to instruction.

Issues related to learner characteristics can be addressed in research considering larger questions related to instruction by assessing participating students in order to create appropriate subgroups of learners. For example, reading tests can be used to create or identify subgroups of learners at different reading levels or with different reading profiles. Although identifying students with learning disabilities can be complex and expensive, simple questions about past experiences in school, such as whether or not a learner was ever identified as having a reading disability or was ever in a special reading class, have been used effectively to identify those with a reading disability.

Answers to questions about whether a learner's first language is English, tests of English language ability, and tests of reading ability can be used to identify ESOL students at various reading levels. One problem with many existing ESOL reading studies is that the English reading ability of students is not identified with sufficient precision. This means that it is often impossible to determine whether those in a study actually qualify as ABE students. Many of these studies investigate reading comprehension instruction for college students in ESOL programs. To determine whether these results are applicable to ABE students in ESOL classes (probably those who are better ABE readers), it is important to know precise, initial reading levels as well as English language levels. To be precise for ABE purposes, reading levels will need to be referenced to common ABE standards such as grade equivalent scores, the NALS levels, or the National Reporting System (NRS) standards.

Many adult educators are convinced that motivation is an important factor in the progress adults are able to make, especially given the fact that ABE, unlike K-12 education, is not mandatory. Despite its importance among adult literacy educators, effects of motivation (whether they are positive, negative, or neutral) on reading achievement have received virtually no attention in the research examined for this review. Where it has been addressed, in the reading comprehension studies, results suggest that when issues related to motivation and feelings about one's reading ability are dealt with directly, reading achievement improves. Replication of this

research and new research related to motivation are needed. Psychometric measures of motivation would also be useful if we want to know whether (or how) initial motivational levels increase in programs that address motivation in order to improve reading achievement.

Instructional Methods and Material

Most of the subtopics associated with instructional methods and material have not been studied. There is some research related to teaching strategies, but very little related to instructional materials, the intensity or duration of instruction, and teacher preparation. These are factors that, like motivation, help to make adult basic education unique, different from K-12 education. There is a greater degree of variation in materials that adults might use. In addition to traditional academic subject matter, they may also use material related to their jobs, families, and other special interests. Unlike children, adults are not required to participate in educational programs and consequently, programs offer a wide variety of options that lead to greater variability in the amount of time spent in programs and the intensity of instruction provided. Children can spend hours on reading instruction each week while most adults cannot. Individual tutoring or small classes may not be feasible in ABE settings where funding is limited. The qualifications and training received by ABE reading teachers is also more variable. Certification requirements are not as well defined and relatively more volunteers and paraprofessionals are used in ABE classrooms.

Initial research that investigates the effects of instructional material, intensity and duration of instruction, and degree of teacher preparation on alphabetics, fluency, and vocabulary instruction is needed. Trends from the ABE vocabulary and reading comprehension research suggest that each is important. These trends, which should be replicated, also demonstrate the unique role that ABE reading instruction research may have in the investigation of instructional methods and materials. This will be discussed in more detail in the following section, along with other ABE research results.

Directions Suggested by Existing ABE Reading Instruction Research

Although areas where research is missing provide some obvious suggestions for future research, existing research can also suggest promising directions. Emerging principles and trends need to be strengthened and refined by research that replicates existing research results. Existing research can also suggest promising new hypotheses to test.

Strong Research Strands

What are the strongest areas of ABE reading instruction research? Not surprisingly, the strongest emerging principles and trends were found within the few topic areas that have relatively well-developed research strands. Research strands develop when hypotheses related to reading assessment or instruction are formulated and then tested with well-designed studies. Next, the hypotheses are modified based on the results from these studies, and then tested again.

Phonemic Awareness. One such strand is the series of studies on ABE adults' phonemic awareness (PA) abilities. A relatively large number of assessment studies (ten experimental and two non-experimental) spanning a period of roughly 20 years demonstrate convincingly that adult non-readers have virtually no phonemic awareness ability, and adults who are just beginning to learn to read have very poor phonemic awar ess ability. PA seems to develop in adult non-disabled readers at least until decoding or word analysis is firmly e lished.

Some of these phonemic awareness studies have found that the number and complexity of PA tasks that adult beginning readers can complete increases as their reading improves. Identifying the order in which PA tasks are learned would not only provide useful information for the development of additional tests of PA but might also provide information to teachers about the order in which these tasks can be taught. Similar research would be useful for WA (word analysis) instruction. In either case, close attention should be paid to learner characteristics, as noted above. A trend from the research that assesses PA ability in adults with a reading disability suggests that they may have more difficulty acquiring PA. This in turn suggests that studies with children demonstrating that those with a reading disability can be taught PA need to be replicated with adults.

Reading Comprehension. Another relatively large group of studies (seven experimental and 16 non-experimental) addresses one of the most important questions for ABE reading instruction: Does participation in adult basic education increase ABE students' reading comprehension achievement? This is an extremely important question because improved reading comprehension is the ultimate goal for reading instruction. Studies of the overall effects of ABE literacy programs on reading comprehension achievement suggest that, more often than not, participation leads to improved reading comprehension achievement. However, it is still the case that participation in some programs leads, on average, to increased achievement while participation in almost as many others does not. One question that certainly should be asked is: What is it that can make ABE reading comprehension instruction effective?

Unfortunately, most of the experimental research in this category has not focused on the causes of observed changes in reading comprehension, such as specific teaching techniques, or program and learner characteristics. Comparisons of different approaches and types of programs are needed. This will require careful descriptions of programs in order to isolate differences that may prove to be significant (and precise descriptions of learner characteristics, as discussed above). Research related to instructional methods and material offers several suggestions for the types of programs that might be investigated: two emerging principles support the use of explicit comprehension strategy instruction and multiple-components instruction while a trend points to less

direct, enabling instruction. Simply comparing one city's ABE students' reading comprehension scores to another city's scores may provide a little information to policy makers but will not, at this point, advance reading instruction research much.

Assessment Profiles. In addition to the emerging principles derived from the NAEP and NALS studies related to fluency and comprehension assessment (the fluency and comprehension abilities of ABE learners), the assessment profiles research seems to demonstrate that the ABE population is fairly diverse and that measuring achievement in each of the major components of the reading process can identify instructionally relevant subgroups of ABE learners. This research should be replicated and extended. This might include additional studies of both ABE and K-12 learners to help understand the similarities and differences between these groups of learners and implications for differential instruction. Assuming that replication research confirms the existence of subgroups, studies of the use of profiles for instruction would be a natural extension of this research. This should include teacher-training studies, where ABE instructors learn to use profiles to help guide instruction.

Word Analysis. Several studies involving instruction in WA suggest that participation in ABE programs may lead to increases in WA achievement but, like those involving reading comprehension instruction, they do not identify specific approaches that are effective. When specific approaches are studied, most involve a mix of WA instruction and instruction in other aspects of reading in ways that make it impossible to isolate the effects of WA instruction. More studies that focus on WA instructional methods and material alone (e.g., Curtis & Chmelka, 1994) are needed.

Fluency. Several studies have also investigated the effects of fluency instruction. They suggest that fluency can be taught to ABE students and that fluency instruction leads to increases in reading achievement. Research has identified one specific strategy that appears to be effective: repeated readings, or reading a text multiple times until it can be read accurately at a normal rate. Fluency studies with ABE learners differ in the type of text they focus on during fluency instruction: whole passages of text, isolated words, or a mixture of text types. More research is needed to determine which of these may be more effective for a particular component.

Stronger Trends

Reading Comprehension. Several studies have found that it is possible to increase reading comprehension achievement within each of the major ABE settings or when focusing on important ABE goals, those related to the workplace, the family, or to general functional literacy. Although some comparative studies suggest that workplace or family literacy programs' goals and settings are more conducive to producing positive effects on reading comprehension achievement, learner characteristics are not controlled for in these studies. This trend should be tested in studies that do control for possible learner differences across major program types. Assessment profiles of learners in these studies might be the best way to provide the necessary data because they can provide information about learner differences in areas other than reading comprehension. It is possible, for example, that self-selection may make the profiles of learners across program types very different.

Some additional reading comprehension studies, such as those conducted by Mikulecky and his colleagues in workplace settings, suggest that issues that are especially important and perhaps unique to adult literacy merit additional study. These include the effects of reading self-efficacy and motivation, the use of contextually relevant adult-oriented instructional material, and the intensity and duration of instruction within ABE settings.

Computer Technology. One emerging principal and two trends in the ABE research, including trends derived from one meta-analysis, suggest that computer-assisted instruction is at least as effective as non-CAI instruction. Results are from studies undertaken in at least two settings important to ABE (general functional literacy and family literacy settings) and across two components of reading (word analysis and reading comprehension). Findings also suggest that CAI may be most effective for adults reading at the pre-secondary level (through GE 8). Replicating these findings and extending them to additional settings and components may be especially useful to ABE for several reasons. If, as has been found for CAI generally, it is more efficient than non-CAI in adult settings, the savings for ABE programs may be significant. Given the promise seen by some for CAI, as a motivational tool and in distance learning, for example (cf., U.S. Congress Office of Technology Assessment, 1993), conclusively demonstrating its effectiveness may help open the way for new, innovative approaches to ABE reading instruction.

Vocabulary. Finally, although there are seven studies having something to do with vocabulary achievement in ABE programs, the results from these studies are decidedly mixed. Vocabulary instruction is especially important for adults with low literacy levels because they are unable to rely as much on reading for exposure to new concepts. Although important, research describing effective approaches for vocabulary instruction is difficult to find, even within elementary and secondary education reading instruction research, which will be discussed next.

Directions Suggested by K-12 Reading Instruction Research

As shown in the previous sections of this report, research summarized in the NRP review of K-12 research provides a wealth of evidence-based ideas for reading instruction. One strong recommendation from the RRWG is that results from K-12 research be used, when feasible, to at least temporarily fill in the gaps in research across the ABE topic areas. It can be convincingly argued that any instructional techniques borrowed from the K-12 research and recommended for use by adult educators be carefully researched with adult learners as soon as possible.

Overview: K-12 Reading Instruction Research is Complementary

What suggestions for ABE research can research from the K-12 level provide? In previous sections of this report, conclusions drawn from the NRP synthesis of K-12 reading instruction research were categorized according to the ABE topics identified by the RRWG. As the following table shows, K-12 research is strikingly complementary

to ABE reading instruction research. In the table, the letter ***I*** in a cell is used to show which topics have one or more ***Ideas*** for reading instruction that have been derived from the NRP K-12 research summary. The letter ***C*** in a cell is used to show where K-12 research can offer one or more suggestions or ***Comments***, which were defined as weaker suggestions than Ideas because they are based on fewer research studies.

SUBTOPICS WITH RESEARCH-BASED PRINCIPLES(P), TRENDS (T), IDEAS (I), OR COMMENTS (C)

MAJOR COMPONENTS OF INSTRUCTION

Subtopics	Assessment Profiles	Alphabetics PA	Alphabetics WA	Fluency	Vocab	Comp	Tech
Assessment of Component							
All adults	P	P	P	P	TC	P	
Adults with LD	(P)	T				P	
ESOL Adults	(P)					P	
Instruction							
Overall		T	P	P		P	PI
Goals and Setting		I	I		TC	T	T
General literacy		T	P	P	T	T	
Workplace literacy			T				
Family literacy			T			T	
Instructional Methods and Material							I
Teaching strategies		I	PI	PI	TC	PI	
Instructional materials						T	
Intensity and duration					T	T	
Teacher preparation						TC	
Learner Characteristics							T
Functional reading level		I		I	C	I	
ESOL							
Learning Disability		I	I				
Motivation						T	

P=Principle, T=Trend, PA=Phonemic Awareness, WA=Word Analysis, Vocab=Vocabulary, Comp=Comprehension, Tech=Computer Technology; LD=Learning Disabilities, ESOL=English for Speakers of Other Languages

The NRP report did not look at assessment in K-12 reading instruction, so there are no ideas (and only one comment) within the reading assessment subtopics. The goals and settings subtopics also seem more important to ABE than to K-12 research. This is reflected in the greater number of these subtopics with principles and trends derived from the ABE research than subtopics with ideas or comments derived from the K-12 research. In contrast, there are somewhat more instructional methods and materials and learner characteristics subtopics with ideas and comments from the K-12 research base than trends from ABE research. This is especially true for the PA subtopics in these areas, which have no trends from ABE research but several ideas from K-12 reading research.

Direction Provided by Complementary K-12 Research Related to Alphabetics Instruction

K-12 research results support the major trends found in the ABE PA instruction research: It is possible to teach PA and PA instruction may lead to increased achievement in other aspects of reading. Research that replicates these findings with ABE learners is needed. This should be done with studies that are designed to identify specific aspects of PA instruction that are effective.

While the ABE research does not identify specific characteristics of effective PA instruction, K-12 research does. Effective K-12 approaches that might be tested with adults include explicit instruction in one or two PA skills, especially segmenting and blending, and using letters to teach PA rather than oral instruction alone. K-12 results related to the intensity and duration of instruction could be tested at the same time. Is, as is the case with children, too much as well as too little PA instruction ineffective, and is small group instruction more effective than individual tutoring and large group instruction?

K-12 PA research also suggests some interesting hypotheses related to learner characteristics. For children without a reading disability, earlier PA training is more effective than later training. Would this apply to one important group of presumably non-disabled ABE learners, those in ESOL classes who are beginning readers of English text only because they have not been exposed to English reading instruction?

Many non-ESOL ABE students are reading disabled. They have been through a K-12 educational system and have nevertheless failed to acquire adequate reading skills. One trend from the ABE research suggests that ABE beginning readers are more like children who are poor readers as opposed to those who are progressing normally. Another trend suggests that adults with a learning disability in reading, such as dyslexia, simply may not develop PA. K-12 research suggests that poor or disabled readers do not benefit as much from PA instruction. All of these findings suggest that disabled adult readers may not benefit sufficiently from PA instruction and that some alternative may needed. Could systematic phonics instruction, which teaches beginning WA skills, be this alternative? K-12 research finds that systematic phonics is equally effective with both disabled and non-disabled readers. And, as mentioned, the most effective form of instruction for teaching children PA is to use letters rather than teaching PA orally. Technically, this is phonics instruction, which teaches letter-sound correspondences. In short, the hypothesis that should be tested with adult disabled readers is whether

systematic phonics instruction leads to gains in PA ability and whether direct, oral PA instruction may be, to some degree at least, bypassed.

Direction Provided by K-12 Research Related to Fluency, Vocabulary, and Comprehension Instruction

Unlike the alphabetics subtopics, topic areas related to fluency, vocabulary, and comprehension contain principals and trends derived from ABE research as well as ideas derived from K-12 research.

Directions for fluency research. K-12 research suggests that several repeated guided oral reading procedures may be effective in improving readers' fluency (repeated reading, paired reading, shared reading, and collaborative or assisted oral reading), although there was not enough research to determine which of these approaches may be most effective. ABE research suggests another approach that, along with these, should be tested for its effectiveness. In this approach, fluency in all aspects of reading is practiced, including automaticity practice with letters, syllables, words, phrases, sentences and paragraphs.

Directions for vocabulary research. ABE vocabulary research has not isolated specific approaches to teaching vocabulary that are effective with adults, although there is some emerging evidence that teaching vocabulary in contextually relevant situations or using contextually relevant material may be effective. Although the vocabulary research reviewed by the NRP was also weak, at least relative to the other K-12 areas investigated, it did support this trend from the ABE research. Because of the importance of context in ABE, this trend should be investigated in future studies. Other approaches suggested by the K-12 review include preteaching vocabulary words and restructuring instruction so that students understand what they need to do when reading and learning new words.

Directions for comprehension research. Comprehension research results from the NRP review of K-12 research are very strong and are concentrated in topic areas related to instructional methods and material and learner characteristics, including teaching strategies, teacher preparation, and reading level.

There is some evidence from ABE research that multiple-components instruction (reading instruction that includes all aspects or components of the reading process) leads to increased reading comprehension achievement. This is supported by strong evidence from K-12 research, where effective instruction in other components (alphabetics and fluency) consistently led to increases in reading comprehension achievement. Assuming that there are ABE programs that do not use a multiple-components approach, this method could be tested by exposing groups of students in these programs to such an approach. It may make sense to combine this type of intervention with teacher training studies in which teachers in these programs learn how to implement multiple-components instruction.

The NRP review of K-12 reading comprehension research found a large number of approaches to teaching reading comprehension, eight altogether, that appear to be effective. Seven of these are effective when used by themselves: comprehension monitoring, cooperative learning, graphic organizers, story structure, question answering, question asking, and summarization. The eighth, multiple strategy instruction, is the most effective and involves the conscious and flexible use of a combination of the other seven. An emerging principle in the ABE reading comprehension instruction research suggests that explicit strategy instruction can be effective with adults as well. More research is needed, however, in order to isolate the specific strategies or combinations of strategies that work best with adults.

Weaker but nevertheless important findings from the K-12 research base suggest that training instructors to teach the use of multiple strategies is effective in improving their students' reading comprehension. This finding is especially important for ABE, where teacher training should be a priority because of the relatively low level of training and experience, on average, among ABE staff. A trend from the ABE research suggests that staff with more experience or training have a better chance at improving their students' reading comprehension achievement.

Taken together, these trends and ideas from the ABE and K-12 research suggest that studies of multiple strategy training, in which both ABE students and teachers receive training, would be very useful. K-12 research also suggests that multiple strategy use is most effective with good readers and those in the 7th grade and higher. Studies of ABE students should investigate whether particular combinations of strategies may be more effective for ABE students with specific assessment profiles. A trend from the ABE reading comprehension research also suggests that directly addressing adults' motivational issues may affect comprehension instruction outcomes and that motivation is another variable that should be controlled or manipulated in studies of comprehension instruction.

Direction Provided by K-12 Research Related to Computer Technology and Reading Instruction

Although weaker than other areas of K-12 reading instruction research, research related to computer technology at the K-12 level supports emerging principles and trends from the ABE research: It is possible to use computer technology effectively for reading instruction. Future ABE CAI research needs to identify specific approaches and computer applications that are effective in ABE settings with specific subgroups of ABE learners. One especially promising area for ABE CAI reading instruction research identified from K-12 research is the use of speech synthesis (text-to-speech applications).

Summary

Emerging principles and trends in ABE reading instruction research and ideas from a large body of synthesized research at the K-12 level provide direction for future ABE reading instruction research. ABE reading instruction research is needed in each of the topic areas identified by the RRWG as important. Assessment research that describes ABE learners' reading ability is important for instruction. Research that examines the quality and effectiveness of assessment instruments is also needed (e.g., Carver, 1998; Strucker, 1997; and Venezky et al., 1994). Reading instruction research should evaluate specific programs of instruction that are designed to increase achievement in specific components of the reading process.

Research should address issues that are especially important for ABE. At a minimum, it should carefully describe the learners' reading levels or abilities and, when possible, their motivational levels. Whenever possible, learner characteristics should be used as an independent variable. The effectiveness of the specific instructional interventions for groups at different reading levels, for groups of ESOL and non-ESOL learners, and for groups of adults with and without a reading disability, should be investigated. Goals and settings important to ABE should also be investigated to determine if specific programs of instruction are more effective in specific settings, such as general functional, family, and workplace literacy programs. Similarly, the use of adult-oriented instructional material should be investigated. Finally, whenever it is possible and makes sense, intervention studies should include groups of children and adults. The effectiveness of interventions for both groups of learners can be determined and comparisons between groups may help guide the application of findings from reading instruction research from one group to another.

Background references

Askov, E., Van Horn, B.V., & Carman, P. (1997). Assessment in adult basic education programs. In A. Rose & M. Leahy (Eds.), Assessing adult learning in diverse settings: Current issues and approaches (Fall ed., pp. 65-74). San Francisco: Jossey-Bass Publishers.

Chall, J. S. (1994). Patterns of adult reading. Learning Disabilities, 5(1), 29-33.

Chall, J. S., & Curtis, M. E. (1990). Diagnostic achievement testing in reading. In C. Reynolds & R. Kamphaus (Eds.), Handbook of Psychological and Educational Assessment of Children (pp. 349-355). New York: Giulford.

CTB/McGraw-Hill. (1987, 1994). TABE: Tests of Adult Basic Education. Monterey, CA: CTB/McGraw-Hill.

Denzin, N.K. & Lincoln, Y.S. (Eds.). (2000). Handbook of qualitative research (Second ed.). Thousand Oaks, CA: Sage Publications, Inc.

Dochy, F., Segers, M., & Buehl, M. M. (1999). The relation between assessment practices and outcomes of studies: The case of research on prior knowledge. Review of Educational Research, 69(2), 145-186.

Harris, T., & Hodges, R. (1995). The Literacy Dictionary. Newark, Delaware: International Reading Association.

Joint Committee on Standards for Educational and Psychological Testing of the American Educational Research Association, American Psychological Association, and National Council on Measurement in Education (1999). Standards for educational and psychological testing. Washington, DC: American Educational Research Association.

Karlsen, B., & Gardner, E. (1986). ABLE: Adult Basic Learning Examination. The Psychological Corporation, Harcourt Brace Jovanovich.

Kirsch, I. S., Jungeblut, A., Jenkins, L., & Kolstad, A. (1993). Adult literacy in America: A first look at the results of the National Adult Literacy Survey. Washington: U.S. Government Printing Office.

Koda, K. (1999). Development of L2 intraword orthographic sensitivity and decoding skills. Modern Language Journal, 83(1), 51-64.

Kulik, C.C., Kulik, J.A., & Shwalb, B. (1986). The effectiveness of computer-based adult education: A meta-analysis. Journal of Educational Computing Research, 2(2), 235-252.

Kulik, C.C., & Kulik, J. A. (1991). Effectiveness of computer-based instruction: An updated analysis. Computers in Human Behavior, 7(1), 75-94.

Kulik, J. (1994). Meta-analytic studies of findings on computer-based instruction. In E. Baker & H. O'Neil (Eds.), Technology assessment in education and training (pp. 9-33). Hillsdale, NJ: Lawrence Erlbaum Associates.

McKeown, M. G., & Curtis, M. E. (1987). The Nature of Vocabulary Acquisition. Hillsdale, NJ: Lawrence Erlbaum Associates.

McLeod, B., & McLaughlin, B. (1986). Restructuring or automaticity? Reading in a Second Language. Language Learning, 36(2), 109-123.

National Reading Panel. (2000a). Report of the national reading panel: Teaching Children to Read. Washington, DC: National Institute of Child Health and Human Development.

National Reading Panel. (2000b). Report of the national reading panel: Teaching Children to Read – Reports of the Subgroups. Washington, DC: National Institute of Child Health and Human Development.

NIFL/NCSALL Reading Research Working Group (2002). Research-Based Practices for Adult Basic Education Reading Instruction: A Guide to the Research for Reading Professionals. Washington, DC: National Institute for Literacy.

Piper, T., & Cansin, D. (1988). Factors influencing the foreign accent. Canadian Modern Language review, 44(2), 334-342.

Roswell, F. G., & Chall, J. S. (1994). Creating successful readers: A practical guide to testing and teaching at all age levels. Chicago: Riverside.

Snow, C. E., Burns, S. M., & Griffin, P. (Eds.). (1998). Preventing Reading Difficulties in Young Children. Washington, DC: National Academy Press.

Snow, C. E., & Strucker, J. (2000). Lessons from preventing reading difficulties in young children for adult learning and literacy. In J. Comings & B. Garner (Eds.), Annual review of adult learning and literacy: A project of the National Center for the Study of Adult Learning and Literacy (Vol. 1, pp. 25-73). San Francisco: Jossey-Bass.

U.S. Congress Office of Technology Assessment (1993). Adult Literacy and New Technologies: Tools for a Lifetime (OTA-SET No. 550). Washington, DC: U.S. Government Printing Office.

Weiderholt, J.L., & Bryant, B.R. (1992). Gray Oral Reading Test: Third Edition. Austin: Pro Ed.

Study references

Aderman, B., Nitzke, S., Pingree, S., & Voichick, J. (1987). Readers' responses to language experience approach materials. Adult Literacy and Basic Education, 11(1), 13-22.

Adrian, J. A., Alegrai, J., & Morais, J. (1995). Metaphonological abilities of Spanish illiterate adults. International Journal of Psychology, 30, 329-353.

Alessi, S. M., Siegel, M., Silver, D., & Barnes, H. (1982-83). Effectivenss of a computer based reading comprehension program for adults. Journal of Educational Technology Systems, 11(1), 43-57.

Bertelson, P., Gelder, B.D., Tfouni, L.V., & Morais, J. (1989). Metaphonological abilities of adult illiterates: New evidence of heterogeneity. European Journal of Cognitive Psychology, 1(3) 239-250.

Boudett, K. P., & Friedlander, D. (1997). Does Mandatory Basic Education Improve Achievement Test Scores of AFDC Recipients? Evaluation Review, 21(5), 568-88.

Brock, M. (1998). The enhancement of literacy development in an adult beginning reader through creating texts to accompany wordless books. In B. Sturtevant & J. Dugan & P. Linder & WM. Linek (Eds.), Literacy and Community: The twentieth yearbook, A peer reviewed publication of the College Reading Association. Commerce, Texas: College Reading Association.

Brooks, G., Davies, R., Ducke, L., Hutchinson, D., Kendall, S., & Wilkin, A. (2001). Progress in adult literacy: Do Learners learn? London: The Basic Skills Agency.

Bruck, M. (1992). Persistence of dyslexics' phonological deficits. Developmental Psychology, 28(5), 874-886.

Byrne, B., & Ledez, J. (1983). Phonological awareness in reading-disabled adults. Australian Journal of Psychology, 35(2), 185-187.

Byrne, M. E., Crowe, T. A., & Hale, S. T. (1996). Metalinguistic and pragmatic abilities of participants in adult literacy programs. Journal of Communication Disorders, 29(1), 37-49.

Carver, R. P., & Clark, S. W. (1998). Investigating reading disabilities using the rauding diagnostic system. Journal of Learning Disabilities, 31(5), 453-471, 481.

Chall, J. (1994). Patterns of adult reading. Learning Disabilities, 5(1), 29-33.

Cheek, E. H., & Lindsey, J. D. (1994). The effects of two methods of reading instruction on urban adults' word identification and comprehension abilities. Journal of Vocational and Technical Education, 11(1), 14-19.

Conti, G. J. (1985). The Relationship between Teaching Style and Adult Student Learning. Adult Education Quarterly, 35(4), 220-28.

Curtis, M. E., & Chmelka, M. B. (1994). Modifying the "Laubach Way to Reading" program for use with adolescents with Learning Disabilities. Learning Disabilities Research and Practice, 9(1), 38-43.

Curtis, M. E., & Longo, A. M. (1997). Reversing Reading Failure in Young Adults. Focus On Basics, 1(B), 18-22.

Darkenwald, G. G., & Valentine, T. (1985). Outcomes of participation in adult basic skills education. Lifelong Learning, 8(5), 17-22.

Diem, R. A., & Fairweather, P. G. (1980). An evaluation of a computer-assisted education system in an untraditional academic setting - A county jail. AEDS Journal, 13, 204-213.

Fitzgerald, N. B., & Young, M. B. (1997). The Influence of Persistence on Literacy Learning in Adult Education. Adult Education Quarterly, 47(2), 78-91.

Friedlander, D., & Martinson, K. (1996). Effects of mandatory basic education for adult AFDC recipients. Educational Evaluation and Policy Analysis, 18, 327-337.

Gallo, D. R. (1972). Reading Rate and Comprehension: 1970-71 Assessment (NAEP 02-R-09). Denver, CO: Education Commission of the States, Denver, Colorado, National Assessment of Educational Progress.

Gambrel, L. B., & Heathington, B. S. (1981). Adult disabled readers' metacognitive awareness about reading tasks and strategies. Journal of Reading Behavior, 13(3), 215-221.

Gerber, S., & Finn, J. D. (1998). Learning Document Skills at School and at Work. Journal of Adolescent & Adult Literacy, 42(1), 32-44.

Gold, P. C., & Horn, P. L. (1982). Achievement in Reading, Verbal Language, Listening Comprehension and Locus of Control of Adult Illiterates in a Volunteer Tutorial Project. Perceptual and Motor Skills, 54(3), 1243-1250.

Gold, P. C., & Johnson, J. A. (1982). Prediction of achievement in reading, self-esteem, auding, and verbal language by adult illiterates in a psychoeducational tutorial program. Journal of Clinical Psychology, 38(3), 513-522.

Gold, R. (1983). Recall of story schema categories by reading disabled adults: Effect of mode of presentation. Perceptual and Motor Skills, 56(2), 387-396.

Gombert, J. E. (1994). How Do Illiterate Adults React to Metalinguistic Training? Annals of Dyslexia, 44, 250-269.

Gorman, T.P., & Moss, N. (1981). A survey of attainment and progress of learners in adult literacy schemes. Educational Research, 23(3), 190-198.

Gottesman, R. L., Bennett, R. E., Nathan, R. G., & Kelly, M. S. (1996). Inner-city adults with severe reading difficulties: A closer look. Journal of Learning Disabilities, 29(6), 589-597.

Greenberg, D. (1998). Betsy: Lessons Learned from Working with an Adult Nonreader. Journal of Adolescent & Adult Literacy, 41(4), 252-261.

Greenberg, D., Ehri, L. C., & Perin, D. (1997). Are Word-Reading Processes the Same or Different in Adult Literacy Students and Third—Fifth Graders Matched for Reading Level? Journal of Educational Psychology, 89(2), 262-75.

Gretes, J. A., & Green, M. (1994). The effect of interactive CD-ROM/digitized audio courseware on reading among low-literate adults. Computers in the Schools, 11(2), 27-42.

Hayes, A. E. (1989). William R. Kenan, Jr. Charitable Trust Family Literacy Project: Final Project Report.. Louisville, Kentucky: National Center for Family Literacy.

Kirsch, I. S., Jungeblut, A., Jenkins, L., & Kolstad, A. (1993). Adult literacy in America: A first look at the results of the National Adult Literacy Survey. Washington: U.S. Government Printing Office.

Lazar, M. K., Bean, R. M., & Van Horn, B.V. (1998). Linking the success of a basics skills program to workplace practices and productivity. Journal of Adolescent & Adult Literacy, 41(5), 352-362.

Maclay, C. M., & Askov, E. N. (1988). Computers and adult beginning readers: An intergenerational approach. Lifelong Learning, 11(8), 23-28.

McDonald, B. A. (1997). The impact of content-based instruction: Three studies. Focus on Basics, 1(D).

McKane, P. F., & Greene, B. A. (1996). The Use of Theory-Based Computer-Assisted Instruction in Correctional Centers To Enhance the Reading Skills of Reading-Disadvantaged Adults. Journal of Educational Computing Research, 15(4), 331-344.

Meyer, V. (1982). Prime-O-Tec: A successful strategy for adult disabled readers. Journal of Reading, 25(6), 512-515.

Mikulecky, L., & Lloyd, P. (1997). Evaluation of workplace literacy programs: A profile of effective instructional practices. Journal of Literacy Research, 29, 555-585.

Morais, J., Bertelson, P., Cary, L., & Alegria, J. (1986). Literacy training and speech segmentation. Cognition, 24, 45-64.

Morais, J., Cary, L., Alegria, J., & Bertelson, P. (1979). Does awareness of speech as a sequence of phones arise spontaneously? Cognition, 7(4), 323-331.

Morais, J., Content, A., Bertelson, P., Cary, L., & Kolinsky, R. (1988). Is there a critical period for the acquisition of segmental analysis? Cognitive Neuropsychology, 5(3), 347-352.

Mudd, N. (1987). Strategies used in the early stages of learning to read: A comparison of children and adults. Educational Research, 29(2), 83-94.

Nickse, R. S. (1988). An intergenerational adult literacy project: A family intervention/prevention model. Journal of Reading, 31(7), 634-642.

Norman, C. A., & Malicky, G. (1987). Stages in the Reading Development of Adults. Journal of Reading, 30(4), 302-07.

Norman, C. A., Malicky, G., & Fagan, W.T. (1988). The reading processes of adults in literacy programs. Adult Literacy and Basic Education, 12(1), 14-26.

Pennington, B., Orden, G. C.V., Smith, S., Green, P.A., & Haith, M. M. (1990). Phonological processing skills and deficits in adult dyslexics. Child Development, 61(6), 1753-1778.

Perin, D., & Greenberg, D. (1993). Relationship between Literacy Gains and Length of Stay in a Basic Education Program for Health Care Workers. Adult Education Quarterly, 3(3), 171-86.

Philliber, W. W., Spillman, R. E., & King, R. E. (1996). Consequences of family literacy for adults and children: Some preliminary findings. Journal of Adolescent & Adult Literacy, 39(7), 558-565.

Pratt, A., & Brady, S. (1988). Relation of phonological awareness to reading disability in children and adults. Journal of Educational Psychology, 80(3), 319-323.

Purcell-Gates, V. (1993). I Ain't Never Read My Own Words Before. Journal of Reading, 37(3), 210-19.

Rachal, J. (1984). The computer in the ABE and GED classroom: A review of the literature. Adult Education Quarterly, 35(2), 86-95.

Rachal, J. R. (1995). Adult Reading Achievement Comparing Computer-Assisted and Traditional Approaches: A Comprehensive Review of the Experimental Literature. Reading Research and Instruction, 34(3), 239-58.

Read, C., & Ruyter, L. (1985). Reading and Spelling Skills in Adults of Low Literacy. Remedial and Special Education (RASE), 6(6), 43-51.

Read, C., Zhang, Y.-f., Nie, H.-y., & Ding, B.-q. (1986). The ability to manipulate speech sounds depends on knowing alphabetic writing. Cognition, 24(1-2), 31-44.

Rich, R., & Shepherd, M. J. (1993). Teaching text comprehension strategies to adult poor readers. Reading & Writing, 5(4), 387-402.

Scarborough, H. S. (1984). Continuity between childhood dyslexia and adult reading. British Journal of Psychology, 75, 329-348.

Scliar-Cabral, L., Morais, J., Nepomuceno, L., & Kolinsky, R. (1997). The awareness of phonemes: So close - so far away. International Journal of Psycholinguistics, 13(38), 211-240.

Scully, M. J. (1991). The use of an educational therapy model with an illiterate adult. Journal of Reading, 35(2), 126-131.

Shaywitz, S., Shaywitz, B. A., Pugh, K. R., Fulbright, R. K., Constable, R. T., Mencl, W. E., Shankweiler, D. P., Liberman, A. M., Skudlarski, P., Fletcher, J. M., Katz, L., Marchione, K. E., Lacadie, C., Gatenby, C., & Gore, J. C. (1998). Functional disruption in the organization of the brain for reading in dyslexia. Proceedings of the National Academy of Sciences USA, 95, 2636-2641.

Sheehan-Holt, J. K., & Smith, M. C. (2000). Does basic skills education affect adults' literacy proficiencies and reading practices? Reading Research Quarterly, 35(2), 226-243.

Smith, M. C. (1996). Differences in Adults' Reading Practices and Literacy Proficiencies. Reading Research Quarterly, 31(2), 196-219.

Sticht, T. G. (1989). Adult literacy education. In E. Z. Rothkopf (Ed.), Review of research in education (Vol. 15, pp. 59-96). Washington, DC: American Educational Research Association.

Sticht, T. G. (1997). The theory behind content-based instruction. Focus On Basics, 1(D).

Sticht, T. G., Armstrong, W. A., Hickey, D. T., & Caylor, J. S. (1987). Cast-off youth: Policy and training methods from the military experience. New York: Praeger.

Strucker, J. (1995). Patterns of reading in adult basic education. Unpublished Doctoral Thesis, Harvard University, Cambridge, MA.

Strucker, J. (1997). What silent reading tests alone can't tell you: Two case studies in adult reading differences. Focus on Basics, 1(B), 13-16.

Tan, A., Moore, D. W., Dixon, R. S., & Nicholson, T. (1994). Effects of training in rapid decoding on the reading comprehension of adult ESL learners. Journal of Behavioral Education, 4(2), 177-89.

Truch, S. (1994). Stimulating basic reading processes using auditory discrimination in depth. Annals of Dyslexia, 44, 60-80.

Venezky, R. L., Bristow, P. S., & Sabatini, J. P. (1994). Measuring change in adult literacy programs: Enduring issues and a few answers. Educational Assessment, 2, 101-131.

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Appendix

Overview of the Reading Excellence Act

From the Reading Excellence Act homepage
(http://www.ed.gov/offices/OESE/REA/).

The Reading Excellence Program, a $280 million Federal grant program, competitively awards grants to States to improve reading. The program is designed to provide children with the readiness skills and support they need to learn to read once they enter school; teach every child to read by the end of the third grade; and use research-based methods to improve the instructional practices of teachers and other instructional staff.

The primary activities are:

Professional Development
Tutoring
Family Literacy
Transition programs for Kindergarten students

Grants are competitively awarded to states. The Department has awarded 27 states Reading Excellence funds. The state applications were reviewed by a non-federal expert panel. The expert review panel was selected by the U.S. Department of Education, National Institute for Child Health and Human Development, National Institute for Literacy, and National Academy of Sciences. The panel included experts in reading, family literacy, transforming research into practice, state and local education reform, and research/evaluation methodology.

From the REA Overview webpage
(http://www.ed.gov/offices/OESE/REA/overview.html):

The Reading Excellence Act was authorized to carry out the following purposes:

Teach every child to read by the end of third grade.
Provide children in early childhood with the readiness skills and support they need to learn to read once they enter school.
Expand the number of high quality family literacy programs.
Provide early intervention to children who are at risk of being identified for special education inappropriately.
Base instruction, including tutoring, on scientifically based reading research.

The National Assessment of Educational Progress (NAEP) shows serious deficiencies in children's ability to read. Even in wealthier schools, almost a quarter of fourth-graders are unable to reach NAEP's basic level. More than two-thirds of fourth-graders in high poverty schools are unable to reach the basic level.

The law was passed for two major reasons. First, in recent years, findings from scientifically based reading research have provided compelling guidance for improved reading practice. Second, national assessments have continued to show great need for improving reading instruction in many schools, especially high poverty schools.

REA Definitions of Reading and Scientifically-Based Research

Title VIII, Section 2252, Definitions — Reading Excellence Act

Reading

The term 'reading' means a complex system of deriving meaning from print that requires all of the following:

a. The skills and knowledge to understand how phonemes, or speech sounds, are connected to print.
b. The ability to decode unfamiliar words.
c. The ability to read fluently.
d. Sufficient background information and vocabulary to foster reading comprehension.
e. The development of appropriate active strategies to construct meaning from print.
f. The development and maintenance of a motivation to read.

Scientifically Based Reading Research

The term 'scientifically based reading research'

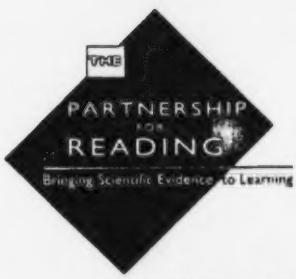
a. means the application of rigorous, systematic, and objective procedures to obtain valid knowledge relevant to reading development, reading instruction, and reading difficulties; and
b. shall include research that —
    i. employs systematic, empirical methods that draw on observation or experiment
    ii. involves rigorous data analyses that are adequate to test the stated hypotheses and justify the general conclusions drawn;
    iii. relies on measurements or observational methods that provide valid data across evaluators and observers and across multiple measurements and observations; and has been accepted by a peer-reviewed journal or approved by a panel of independent experts through a comparably rigorous, objective, and scientific review.

The Partnership for Reading

The Partnership for Reading is a collaborative effort by three federal agencies—the National Institute for Literacy (NIFL), the National Institute of Child Health and Human Development (NICHD), and the U.S. Department of Education—to bring the findings of evidence-based reading research to the educational community, families, and others with an interest in helping all people learn to read well. First established in 2000, The Partnership is now authorized by the No Child Left Behind Act of 2001 (P.L. 107-110).

The Partnership's mission is to disseminate evidence-based research, a focus that makes it substantively different from earlier information dissemination efforts and clearinghouses. This mandate to use evidence-based research as the basis for making decisions about reading instruction was advanced by the work of the National Reading Panel (NRP), assigned by Congress in 1997 to review the available research. Setting high standards for research quality, the NRP examined more than 460 studies to extract the essential findings about what has been scientifically proven to work in reading instruction.

The work of the NRP was just the beginning. Through ongoing, high quality research, our understanding of how to teach reading will continue to grow. The Partnership for Reading will stay at the forefront of that effort in several ways. First, The Partnership will bring the substantial body of evidence established by the NRP to the educational community through products and events that articulate the findings for a wide range of audiences. Second, it will continue to build the connection between scientific evidence and strategies used in classrooms and at home to make children better learners. And finally, The Partnership will add to the body of knowledge through continual review of new and existing research, using high standards of research quality. Visiit the web site @ www.nifl.gov/partnershipforreading.



National Institute for Literacy

National Institute of Child Health
and Human Development

U.S. Department of Education

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